The PHOTOFACT Servicer

SET 401 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JUNE 1, 1958

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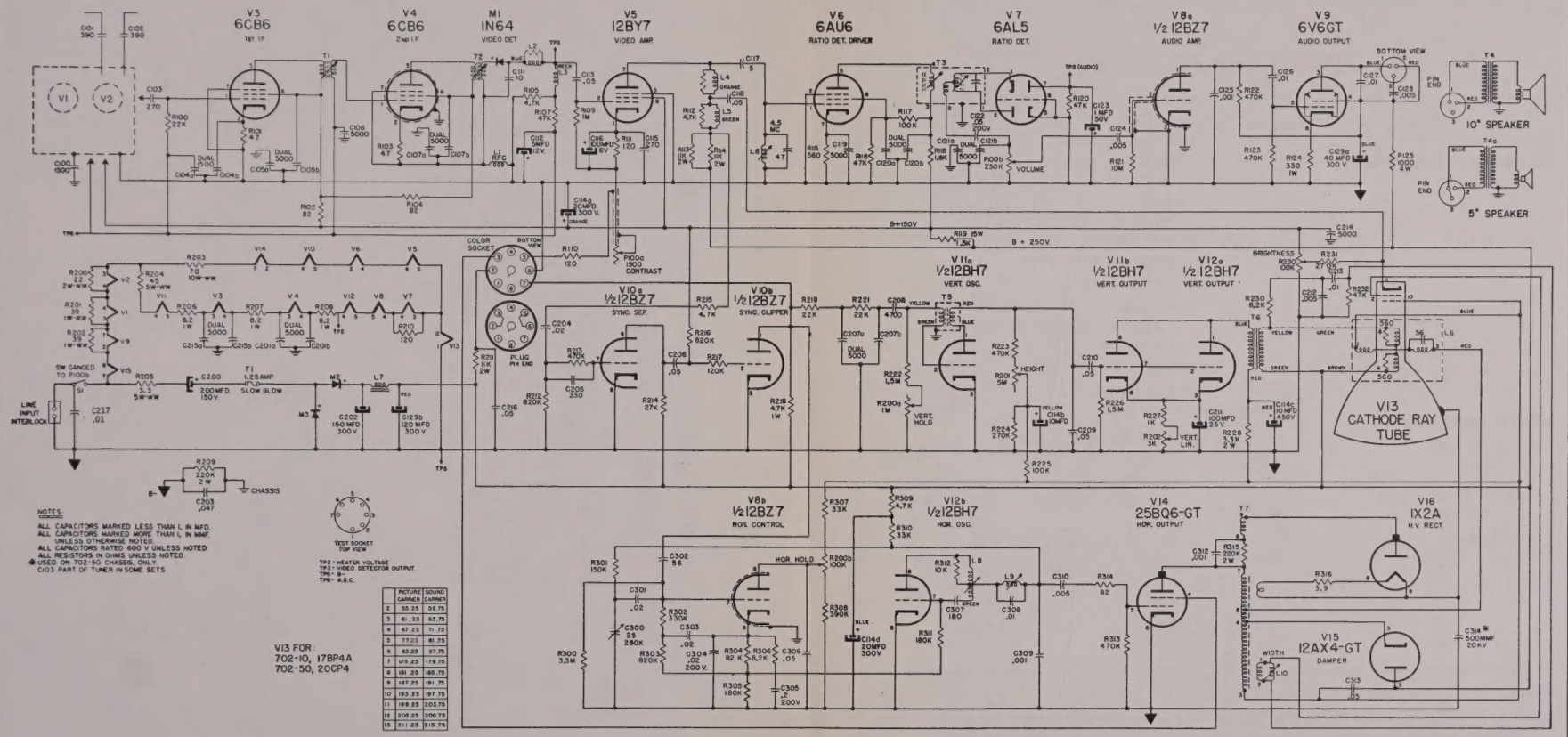
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

AIR KING CHASSIS 702-10, 702-50



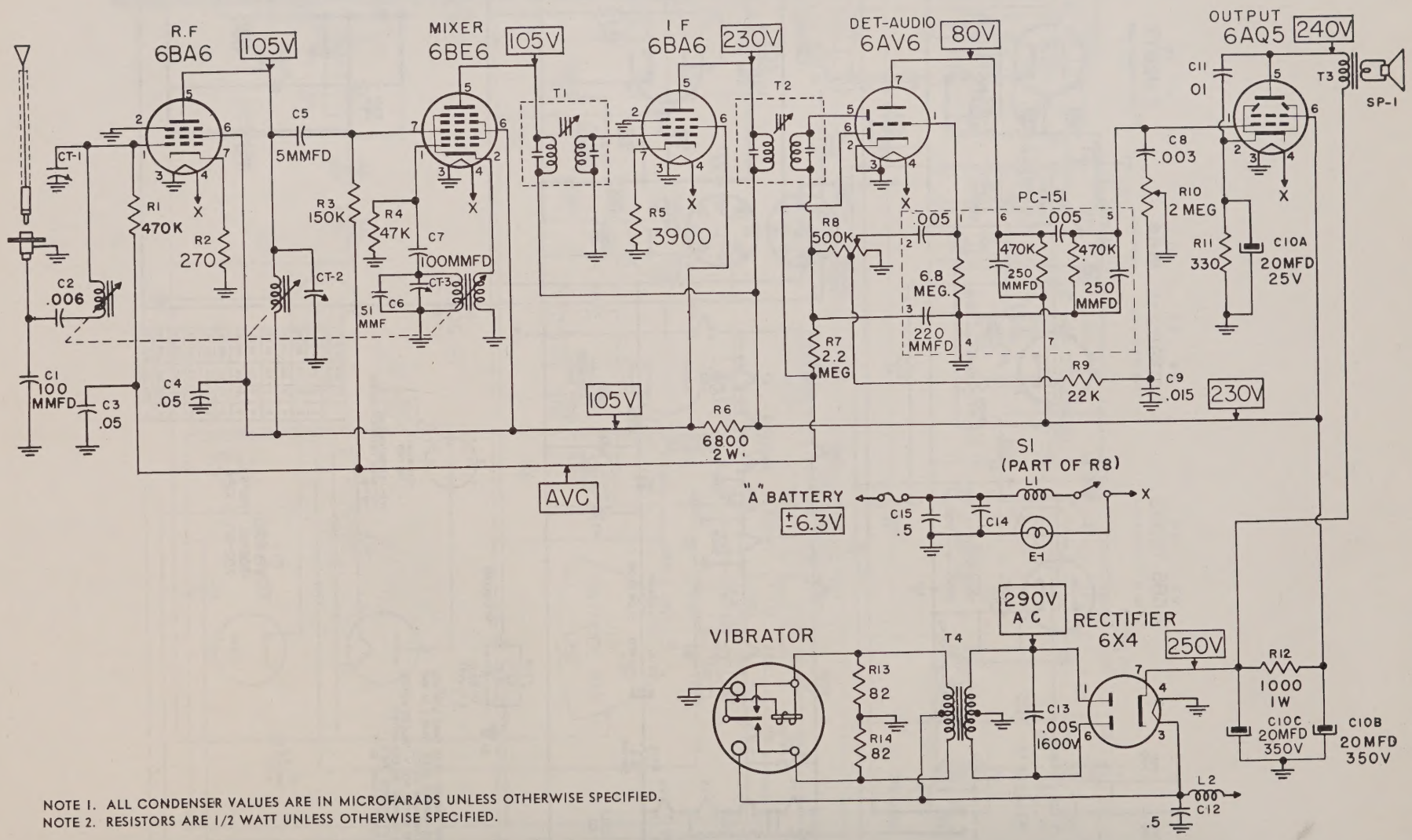
NOTES:
ALL CAPACITORS MARKED LESS THAN 1, IN MFD.
ALL CAPACITORS MARKED MORE THAN 1, IN MMF. UNLESS OTHERWISE NOTED.
ALL CAPACITORS RATED 600 V UNLESS NOTED
ALL RESISTORS IN OHMS UNLESS NOTED.
* USED ON 702-50 CHASSIS, ONLY.
C103 PART OF TUNER IN SOME SETS

V13 FOR:
702-10, 17BP4A
702-50, 20CP4

	PICTURE CARRIER	SOUND CARRIER
2	55.25	59.75
3	61.25	65.75
4	67.25	71.75
5	77.25	81.75
6	83.25	87.75
7	175.25	179.75
8	181.25	185.75
9	187.25	191.75
10	193.25	197.75
11	199.25	203.75
12	205.25	209.75
13	211.25	215.75

SCHEMATIC DIAGRAM COURTESY AIRKING PRODUCTS COMPANY

AIRLINE MODEL FJB-6571 (1955 FORD)



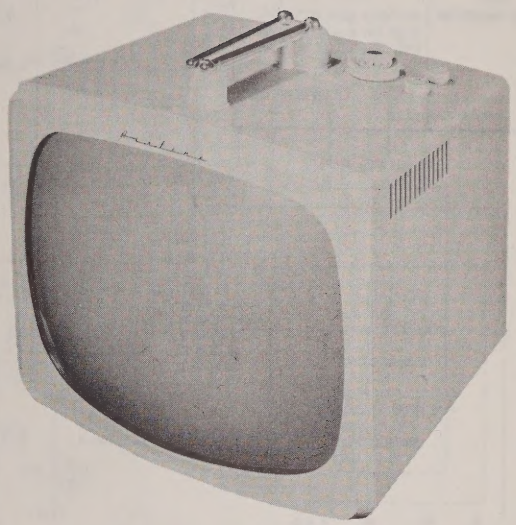
NOTE 1. ALL CONDENSER VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
NOTE 2. RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.

SCHEMATIC DIAGRAM COURTESY MONTGOMERY WARD AND COMPANY

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs.
2. Remove 6 metal screws holding the rear cover. Remove the rear cover.
3. Remove the speaker leads and 2 hex nuts holding the speaker.
4. Remove 2 snap-in fasteners holding the antenna terminal board.
5. Remove the screw holding the telescoping antenna. Remove the antenna.
6. Remove the picture tube socket, yoke clamp and HV lead.
7. Remove 2 chassis bolts holding the vertical chassis to the top of the cabinet.
8. Remove 4 chassis bolts from the bottom.
9. Remove the chassis and yoke.



CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Airline MODELS GTM-4200A, GTM-4300A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	105-120 Volts AC, 60 Cycle RATING 135 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover and suppling power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, through a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube and safety glass cleaning, it is necessary to remove the chassis. (See disassembly instructions).

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B2) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the quieting control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSE DEVICE

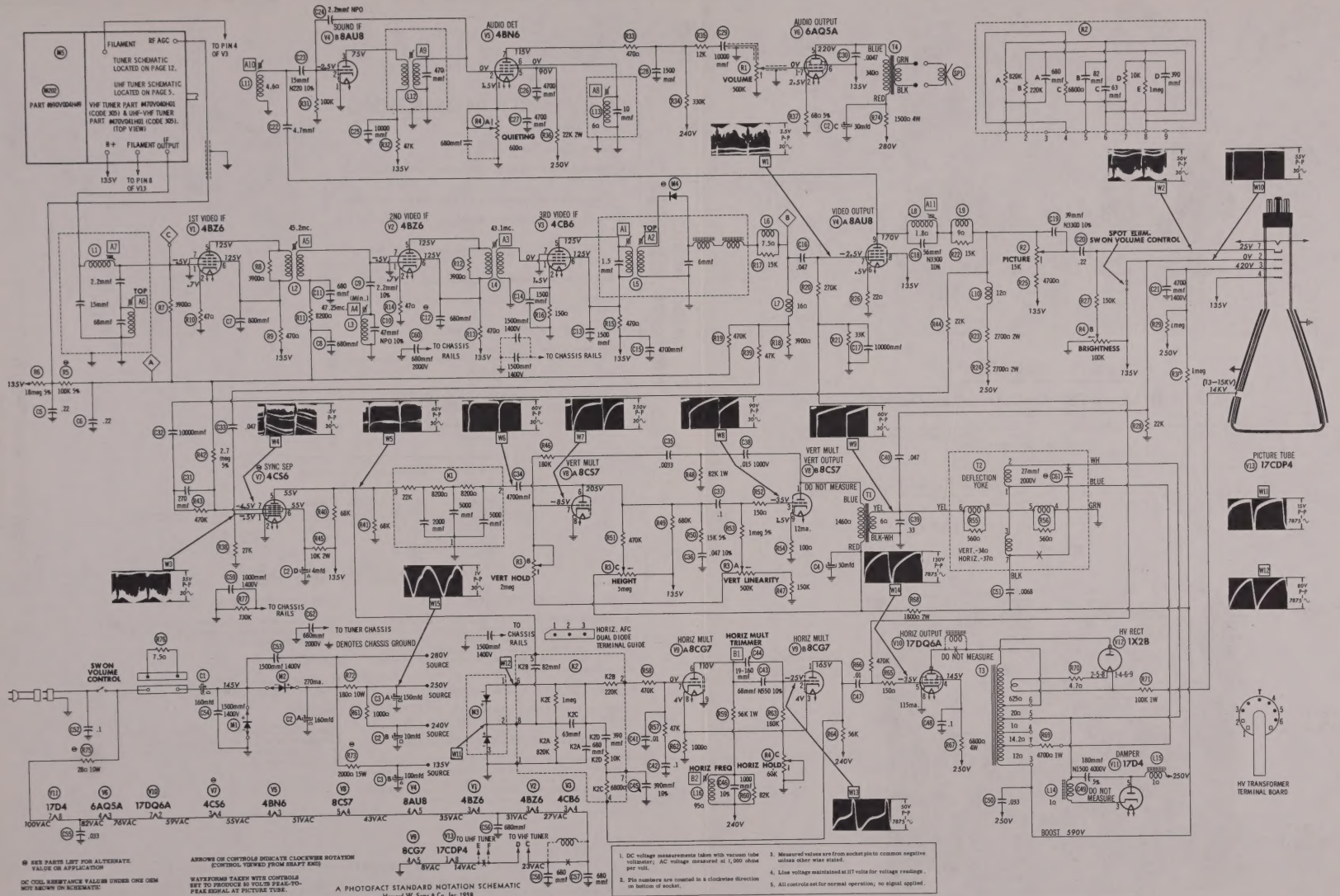
A 7.5Ω fusible resistor (R77) is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

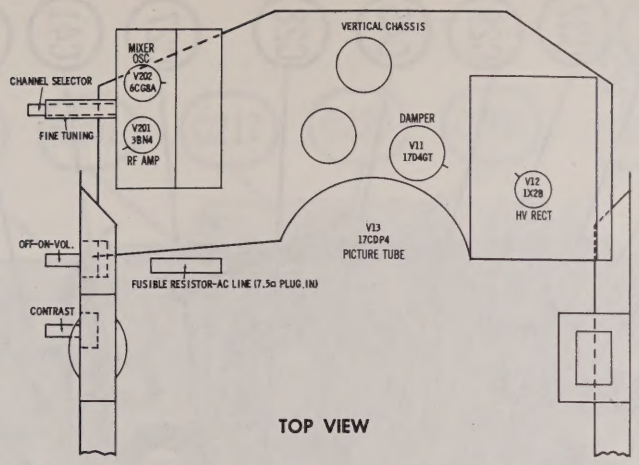
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

AIRLINE MODELS
GTM-4200A, GTM-4300A

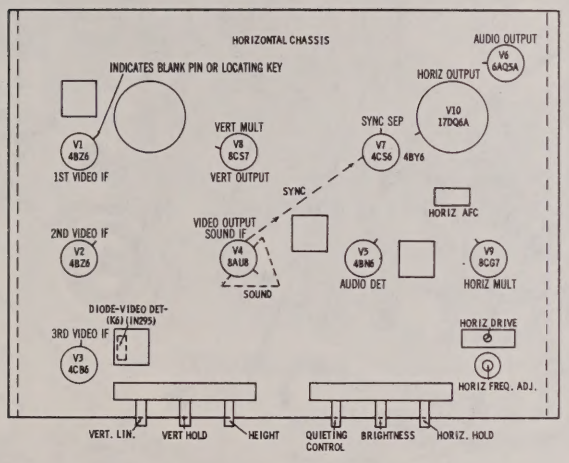
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


TUNER SCHEMATIC LOCATED ON PAGE 12.
UHF TUNER SCHEMATIC LOCATED ON PAGE 5.
VHF TUNER PART #670V040H01 (CODE 3D1) & UHF-VHF TUNER PART #670V041H01 (CODE X51). (TOP VIEW)
SOUND IF V4 8AU8
AUDIO DET V5 4BN6
AUDIO OUTPUT V6 6AQ5A
VOLUME 500K
QUIETING
1ST VIDEO IF V1 4BZ6
2ND VIDEO IF V2 4BZ6
3RD VIDEO IF V3 4CB6
VIDEO OUTPUT V4 8AU8
SPOT ELIM-SW ON VOLUME CONTROL
PICTURE 15K
BRIGHTNESS 100K
SYNC SEP V7 4CS6
VERT MULT V8 8CS7
VERT MULT V8 8CS7
DO NOT MEASURE
VERT HOLD 2meg
HEIGHT 5meg
VERT LINEARITY 500K
DEFLECTION YOKE
VERT.-34Ω HORIZ.-37Ω
PICTURE TUBE V13 17CDP4
HORIZ. AFC DUAL DIODE TERMINAL GUIDE
HORIZ MULT V9 8CG7
HORIZ MULT TRIMMER
HORIZ MULT V9 8CG7
HORIZ OUTPUT V10 17DQ6A
HV RECT V12 1X2B
DAMPER V11 17D4
HORIZ FREQ
HORIZ HOLD 66K
BOOST 590V
HV TRANSFORMER TERMINAL BOARD
SW ON VOLUME CONTROL
TO TUNER CHASSIS
DENOTES CHASSIS GROUND
TO CHASSIS RAILS
TO VHF TUNER
TO UHF TUNER
280V SOURCE
250V SOURCE
240V SOURCE
135V SOURCE
V1 17D4 100VAC
V2 6AQ5A 82VAC
V3 17DQ6A 39VAC
V4 4CS6 55VAC
V5 4BN6 31VAC
V6 8CS7 43VAC
V7 8AU8 33VAC
V8 4BZ6 31VAC
V9 4CB6 27VAC
V10 8CG7 8VAC
V11 17CDP4 14VAC
V12 1X2B 2.5VAC
V13 17D4 2.5VAC
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless other wise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

TUBE PLACEMENT CHART



TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

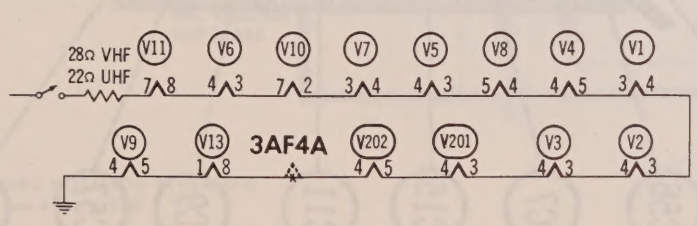
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R77), Rectifier (M1, M2)**

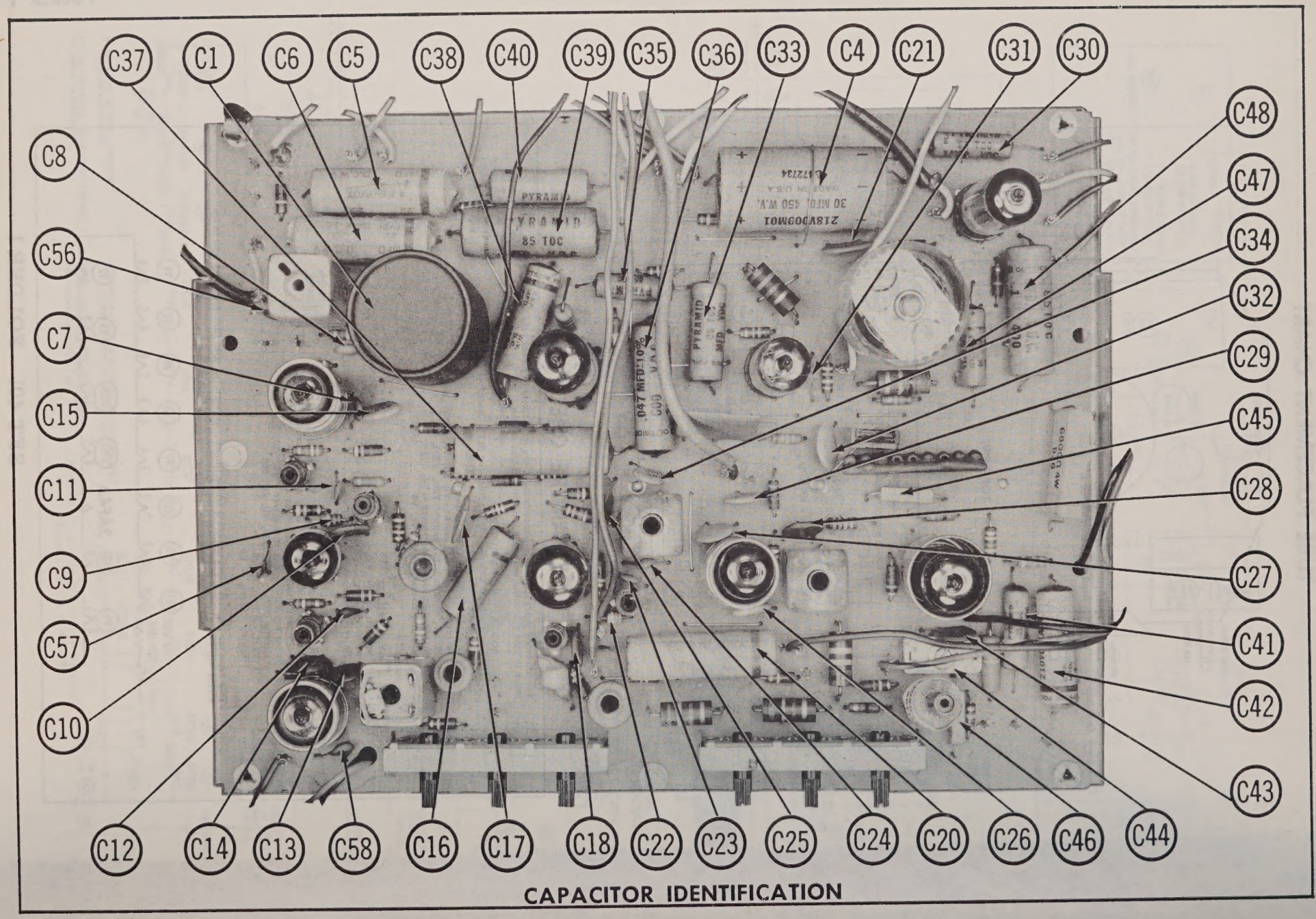
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V1, V2, V3, Diode (M4), V4**
No pic, no sound, has snow - **V201, V202, V1**
No pic, has sound, has raster - **V4, V13**
Has pic, no sound - **V4, V5, V6**

SYNC FAILURE
No vert. sync - **V7**
No horiz. sync - **V7, Rectifier (M3)**
No vert. or horiz. sync - **V7**

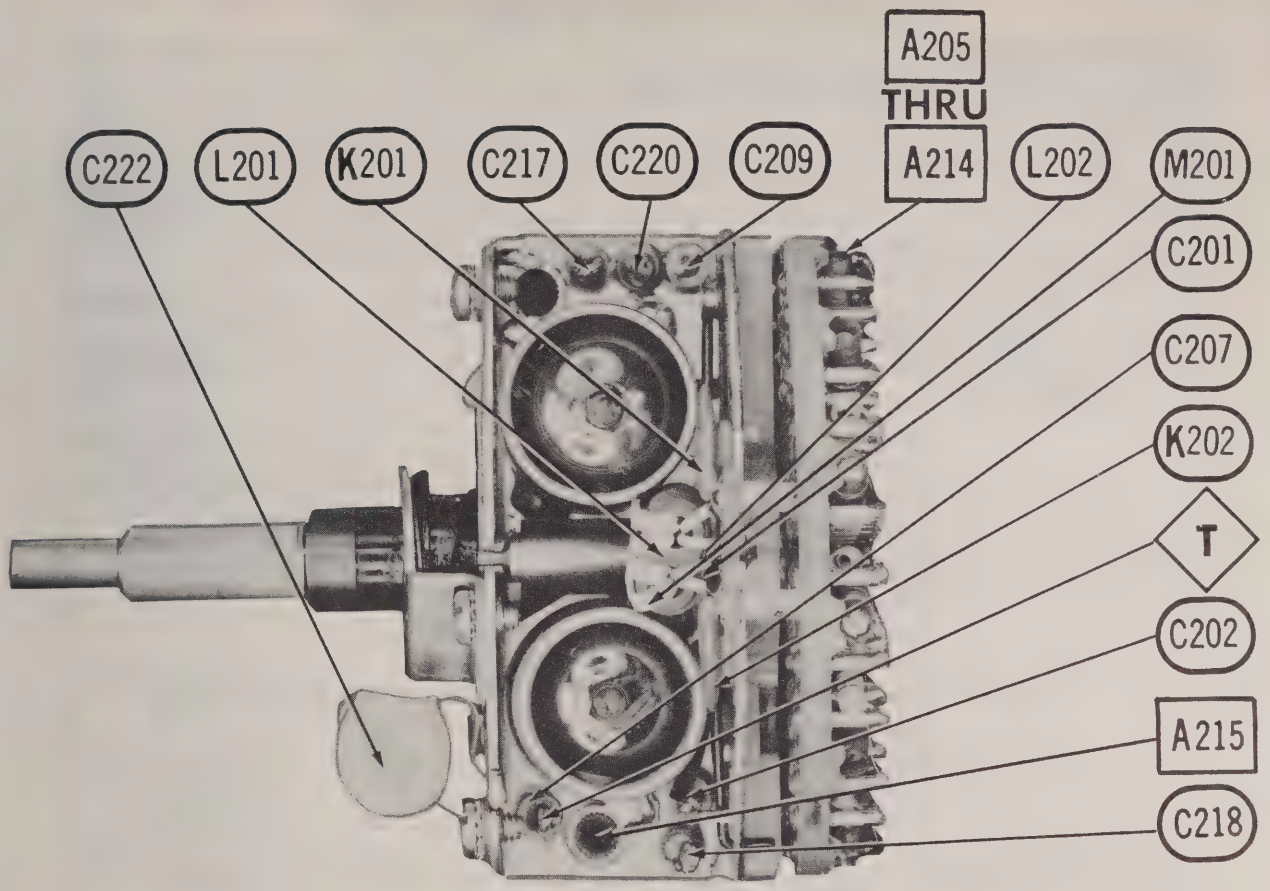
SWEEP FAILURE
No raster, has sound - **M3, V9, V10, V11, V12, V13**
No vertical deflection - **V8**
Poor vert. linearity or foldover - **V8**
Poor horiz. linearity or foldover - **V9, V10, V11**
Narrow picture - **V9, V10, V11, M1, M2**
Vert. off freq. - **V8**
Horiz. off freq. - **V9**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).

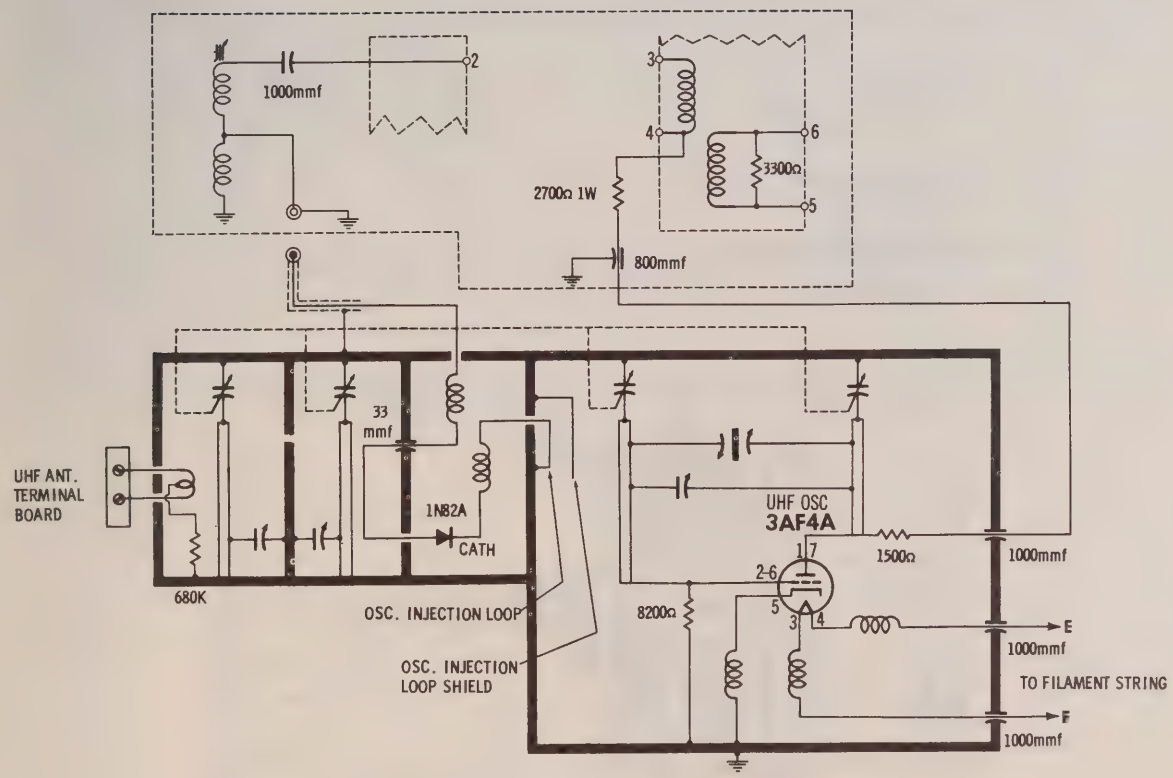




CAPACITOR IDENTIFICATION



RF TUNER-TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TUNER PART #472V032H01

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range. The adjustment slugs are accessible one at a time thru a hole in the right side of the tuner rear cover when viewed from the rear. As the channel selector is rotated, adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

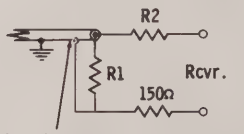
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals matching network (Fig. 201).	207MC	205.25MC 209.75MC	12	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 202.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A203	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns. Coils A203 thru A214 are accessible thru the rectangular hole on left side of tuner rear cover when viewed from rear.
			207MC	205.25MC 209.75MC	12		A204	
			201MC	199.25MC 203.75MC	11		A205	
			195MC	193.25MC 197.75MC	10		A206	
			189MC	187.25MC 191.75MC	9		A207	
			183MC	181.25MC 185.75MC	8		A208	
			177MC	175.25MC 179.75MC	7		A209	
			85MC	83.25MC 87.75MC	6		A210	
			79MC	77.25MC 81.75MC	5		A211	
			69MC	67.25MC 71.75MC	4		A212	
			63MC	61.25MC 65.75MC	3		A213	
			57MC	55.25MC 59.75MC	2		A214	

44MC TRAP

An antenna trap adjusted by A215 is normally set at the factory at 44MC. However, A215 may be adjusted to attenuate any interference between 40 and 46MC.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.



Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

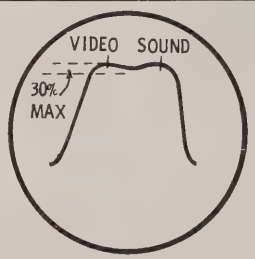
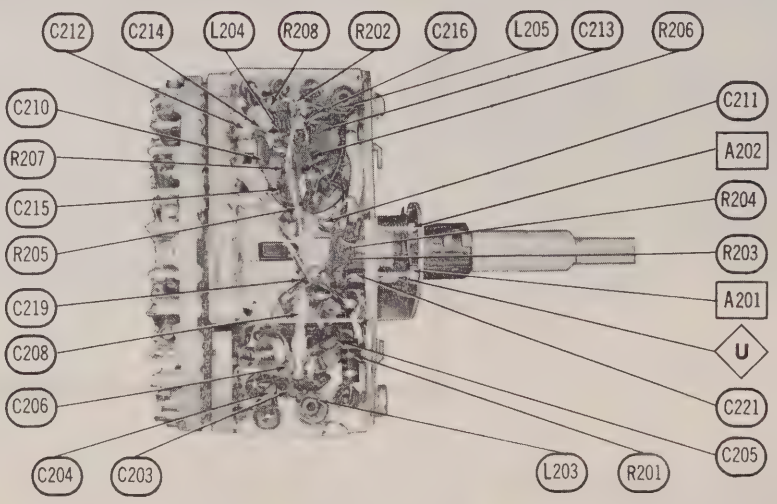


FIG. 202



RF TUNER–BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Preset A7 fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Connect a 470mmf capacitor across the input leads of the scope and the VTVM.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 4CB6 (V3). Low side to chassis.	44MC (10MC Swp)	43.9MC	Any non-interfering channel	Vert. Amp. thru 47K to point Ⓑ . Low side to chassis.	A1, A2	Adjust A1 for maximum amplitude of response. Adjust A2 to correct tilt.
2.	"	High side to point Ⓒ . Low side to chassis.	Not used	43.1MC	"	USE VTVM. DC probe thru 47K to point Ⓑ . Common to chassis.	A3	Adjust for maximum deflection.
3.	"	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.
4.	"	"	"	45.2MC	"	"	A5	Adjust for maximum deflection.
5.	"	"	44.0MC (10MC Swp)	41.25MC 42.25MC 43.0MC 44.0MC 45.0MC 45.75MC 47.25MC	"	Vert. Amp. thru 47K to point Ⓑ . Low side to chassis.		Retouch A1, A2, A3 and A5 if necessary for response similar to Fig. 1. NOTE: If excessive tilt is present adjust A1 and A2 to 44.5MC.
6.	"	High side to tuner test point. Low side to chassis.	Not used	41.25MC	"	USE VTVM. DC probe thru 47K to point Ⓑ . Common to chassis.	A8	Adjust for MINIMUM deflection.
7.	Fig. 201	Across antenna terminals thru matching network (See Fig. 201 in tuner alignment).	"	59.75MC	2	"	Fine tuning	Adjust for MINIMUM deflection.
8.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	"	Vert. Amp. thru 47K to point Ⓑ . Low side to chassis.	A7, Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Adjust A7 for maximum gain, Mixer Plate Coil for proper tilt.

SOUND IF ALIGNMENT

1. Connect a high impedance AC voltmeter or scope across the volume control to serve as an indicator.
2. Set quieting control (R4A) to the center of its range.
3. Apply a 4.5MC FM signal (15KC sweep) to point Ⓑ . Connect low side to chassis.
4. Using a strong signal, adjust A8 for maximum deflection.
5. Reduce the signal strength to the lowest point that will provide an indication. Adjust A9 and A10 for maximum deflection.
6. Replace the FM signal with a 4.5MC AM signal (30% Mod.) and adjust the generator for a strong output.
7. Adjust the quieting control (R4A) for MINIMUM response or output.

ALTERNATE SOUND IF ALIGNMENT USING AIR SIGNAL

1. Tune the receiver to a TV station and connect an adjustable attenuator between the antenna terminals and lead-in so that the signal strength may be varied from strong to weak.
2. Set the quieting control (R4A) at the center of its range.
3. Apply a strong signal to the receiver and adjust A8 for maximum sound. If peaks occur at two widely separated positions, use the one which occurs with the slug farthest counter clockwise. If two peaks occur within a narrow range of adjustment, sufficient signal is not being applied and will have to be increased, or the quieting control is not set at the correct position.
4. Reduce the signal until a hiss is heard in the sound. Adjust A9 and A10 for maximum sound. If more than one peak occurs, use the one with the slug most counter clockwise.

4.5MC TRAP ALIGNMENT

Tune in a TV station and adjust all controls for a normal picture. Turn fine tuning to obtain a grainy effect (4.5MC beat pattern) in the picture. Adjust A11 for MINIMUM grain in the picture.

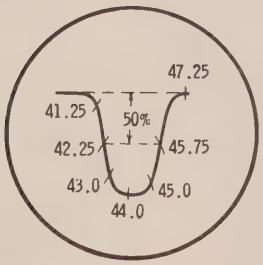


FIG. 1

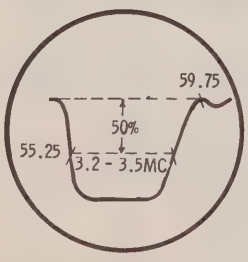


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st Video IF Amp.	4BZ6	
V2	2nd Video IF Amp.	4BZ6	
V3	3rd Video IF Amp	4CB6	
V4	Video Output-Sound IF Amp	8AU8	
V5	Audio Det	4BN6	
V6	Audio Output	6AQ5A	
V7	Sync Sep	4CS6	4BY6 *
V8	Vert. Mult -Vert Output	8CS7	
V9	Horiz. Mult.	8CG7	
V10	Horiz. Output	17DQ6A	
V11	Damper	17D4	
V12	HV Rectifier	1X2B	

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	AIRLINE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V13	17CDP4		17CDP4 ①		① Silvarama

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA							
	CAP	VOLT	AIRLINE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No.	
C1	160	300	21SV025H03	AFH1-25-75					R2583 *	
C2A	160	350	21SV025H01	AFH4-56-95	XD0695	FP419-85 TC79			R2579 *	
B	80	300								
C	30	300								
D	44	300								
C3A	150	300		AFH3-26	C0734.3	FP327.7 TC79	TMT-165 TD-40-350	D-148 MT-4550	R2578 *	
B	100	300				TC77	TD-30-450	MT-4530		
C4	30	450	21SV009H01	PRS450V30	BR3045				TVA-1751	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA								NOTES
	CAP	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.		
C5	22	200		P288N-22		CUB2P22		GEM-3022	2TM-P22		
C6	22	200		P288N-22		CUB2P22		GEM-3022	2TM-P22		
C7	800		21SV300H18	BPD-0008	DD-801	L10T8	ED-0008		5GA-T8		
C8	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		
C9	2.2			NPO-S1 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	10%	
C10	47		21SV300H06	NPO-D1 47	TCZ-47	C10Q47C	TCO-47		5TCC-Q47		NPO 10%
C11	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		
C12	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		①
C13	1500		21SV300H28	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15		
C14	1500		21SV300H28	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15		
C15	4700			BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47		
C16	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47		
C17	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	5HK-S1		
C18	56										N330 10%
C19	39										N330 10%
C20	.22	400		P288N-22		CUB4P22		GEM-4022	4TM-P22		
C21	4700	1400		DAC-8	DC80-472	EVC1ED47			20EK-D5		
C22	4.7			NPO-S1 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47		
C23	15										N220 10%
C24	2.2			NPO-S1 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22		NPO
C25	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	5HK-S1		
C26	4700			BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47		
C27	4700			BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47		
C28	1500		21SV300H28	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15		
C29	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	5HK-S1		
C30	.0047	600		P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47		
C31	270			BPD-00037	DD-371	L10T27	ED-370	UC-5347	5GA-T37		
C32	10000			BPD-01	DD-103	BYA5S1	ED-01	DC5U	5HK-S1		
C33	047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47		
C34	4700			BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47		
C35	.0033	600		P688N-0033	D6-332	CUB6D33	GP-3300	GEM-6233	6TM-D33		
C36	047	600									10%
C37	1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1		
C38	015	1000	21SV07LA03	P1088N-015	DD6-153	CUB1D15	ED-015	GEM-4015	10TM-S15		
C39	33	200		P288N-33		CUB2P33		GEM-2033	2TM-P33		
C40	047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47		
C41	01	400		P488N-01	DF-103	CUB4S1	GP-10000	GEM-411	4TM-S1		
C42	1	200		P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1		
C43	56										N550 10%
C44	19-160		21TV50H01								
C45	390				D6-391	5RST39	ED-390		MS-339		10%
C46	1000			1464-001		1R5D1	ED-1000	MCB255	MS-21		10%
C47	01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1		
C48	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1		
C49	180	4000	21SV300H30								N1500 5%
C50	033	800		P688N-033	DF-303	CUB6S33		GEM-6133	6TM-S33		
C51	0068	600		P688N-0068	D6-682	CUB6D68	GP-6800	GEM-6268	6TM-D68		
C52	1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1		
C53	1500	1400		HVD-30-1500	DC80-152	HVC16D15	HD15-1500	DC30215			
C54	1500	1400		HVD-30-1500	DD80-152	HVC16D15	HD15-1500	DC30215			
C55	033	600		P688N-033	DF-303	CUB6S33		GEM-6133	6TM-S33		
C56	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		
C57	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		
C58	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68		
C59	1000	3400	21SV300E02	DAC-2	DC80-102	HVC16D1	HD15-1000	DC3021	20CA-D1		
C60	680	2000		HVD-30-680	DD80-681	HVB20T68	HD5-680	DC30368			
C61	27	2000									③
C62	680	2000	21SV300E19	HVD-30-680	DC80-681	HVB20T68	HD5-680	DC30368			

① Some versions may use 470mmf (Part #21SV300H07) in this application.
② Not used in some versions.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	500K	1/2	270V043H01	B-60	A47-500K-Z		U48	Volume
B	Shaft			Not Req.	P8-3		Not Req.	
C	Switch			KR-3 or KB-3*	SWE-21		U8-38	AC & Spot Eliminator
R2A	15K	1/2	270V003H07	B-23	A47-15K-E	BU-118	TA153L	Picture
B	Shaft			Not Req.	P8-3	BK1	Not Req.	
R3A	500K	1/2	270V040H02					Vert. Lin.
B	2meg	1/2						Vert. Hold
C	5meg	1/2						Height
R4A	600Ω	1/2	270V040H01					Quieting
B	100K	1/2						Brightness
C	60K	1/2						Horiz. Hold

* Use KR-3 with CRL "red label" controls, KB-3 with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R5	100K 5%			Note 1
R6	18meg 5%			
R7	3900Ω			
R8	3900Ω			
R9	470Ω			
R10	47Ω			
R11	8200Ω			
R12	3900Ω			
R13	470Ω			
R14	47Ω			
R15	470Ω			
R16	150Ω			
R17	15K			
R18	3900Ω			
R19	470K			
R20	270K			
R21	33K			
R22	15K			
R23	2700Ω	2		
R24	2700Ω	2		
R25	4700Ω			
R26	22Ω			
R27	150K			
R28	22K			
R29	1meg			
R30	1meg			
R31	100K			
R32	47K			
R33	470Ω			
R34	330K			
R35	12K			
R36	22K	2		
R37	680 5%			
R38	27K			
R39	47K			
R40	68K			
R41	68K			

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R42	2.7meg 5%			
R43	470K			
R44	22K			
R45	10K	2		
R46	180K			
R47	150K			
R48	82K	1		
R49	680K			
R50	15K 5%			
R51	470K			
R52	150Ω			
R53	1meg 5%			
R54	100Ω			
R55	560Ω			
R56	560Ω			
R57	47K			
R58	470K			
R59	56K	1		
R60	82K			
R61	10000			
R62	1000Ω			
R63	180K		250V221A84	
R64	56K			
R65	150Ω			
R66	470K			
R67	68000Ω	4	251V020H11	
R68	1800Ω	2		
R69	4700Ω	1		
R70	4.7Ω		251V004A79	
R71	100K	1		
R72	1800Ω	10	251V011H08	
R73	20000Ω	15	251V017H02	Note 2
R74	1500Ω	4	251V020H12	
R75	28Ω	10	251V011H09	Note 3
R76	7.5Ω		255V002H01	
R77	330K			

Note 1. Some versions use a 470K 5% (Part #250V214A74) in this application.
Note 2. UHF versions use a 18000 15W (Part #251V017H06) in this application.
Note 3. UHF versions use a 23Ω 10W (Part #251V011H10) in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA						NOTES
		AIRLINE PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Vert. Output	430V005H04	Z1900 ①		V312 ②		26S54 ③	A-109X	
T2A	Yoke-Horiz. (19MH)	490V006H01 ④		MDF-111					
B	(110°)-Vert. (32MH)								
M6	Rear Cover &								
	Centering Device	78LV10LH01							
	Yoke Clamp	76BV01AH03							
T3	Horiz. Output	493V004H07					D-95*		

① Use 18 to 1 turns ratio.
② Remove green lead of yoke from ground. Connect green lead of yoke and green lead of vert. output transformer to junction of R68 and C4. Connect red lead to yellow lead of yoke.
③ Does not include leads, R55, R56 or C81.
④ Does not include leads.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
6					6	
5					4	
T					T	
3					3	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T4	7000Ω	3-4Ω	430V041H01	Z1113	A-2931	AU-602	A-3878	24S52	S-7X	

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP		AIRLINE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω		570VG15H01	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	235V003H01					Includes 41.25MC Trap
L2	2nd. Video IF	235V020H01					
L3	47.25MC Trap	230V030H01					
L4	3rd. Video IF	235V020H01					
L5	4th. Video IF	235V005H02					Includes Assembly
L6	Series Peaking Coil	230V034H03	19-3125	TV-196	6120		140 Microhenries
L7	Shunt Peaking Coil	230V034H04	19-3300	TV-188	6174	VP-8	800 Microhenries
L8	4.5MC Trap	230V030H02					
L9	Series Peaking Coil	230V019H2	19-3250	TV-185	6181	VP-6	230 Microhenries
L10	Shunt Peaking Coil	230V034H01		TV-190	6132	VP-7	250 Microhenries
L11	1st. Sound IF	230V030H06					
L12	2nd. Sound IF	235V020H02					
L13	Quadrature Coil	230V018H01					
L14	RF Choke	230V019H10	19-1006		4634		14 Microhenries
L15	RF Choke	230V019H10	19-1006		4634		14 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L16	95Ω		230V032H01						

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 82000, 2200Ω	21SV003H01	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-104 15TM3 1406-01 V-1
K2	Horiz. AFC	82mmf, 390mmf, 680mmf, 62mmf, 56000Ω, 10K, 220K, 1meg, 820K	21SV002H02	Erie	709-10

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	AIRLINE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.270A	29SV006H01 ①				M500 ①	① Silicon
						350A ②	② Selenium
M2	.270A	29SV006H01 ①				M500 ①	③ Two required.
						350A ②	
M3		29SV004H01 ②	1215 ②③			1T1 ②③	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		AIRLINE PART No.	CBS PART No.	SYLVANIA PART No.	
M4	KS *		1N60	1N60	Video Detector (Pigtail)

* Some versions may use either 1N295 or 1N54 (Part #Y-10H5-3) in this application.

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M5	Tuner	470V040H01	VHF (Code 305)
	Tuner	470V040H03	VHF, Standard Coil Part #FN48-037
	Tuner	470V041H01	UHF-VHF (Code 308)
	Tuner	470V041H02	UHF-VHF, Standard Coil Part #FN148-038
	Tuner	472V032H01	UHF
	Tuner	472V032H03	UHF
M6	Centering Device	76LV10LH01	Includes yoke rear cover

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

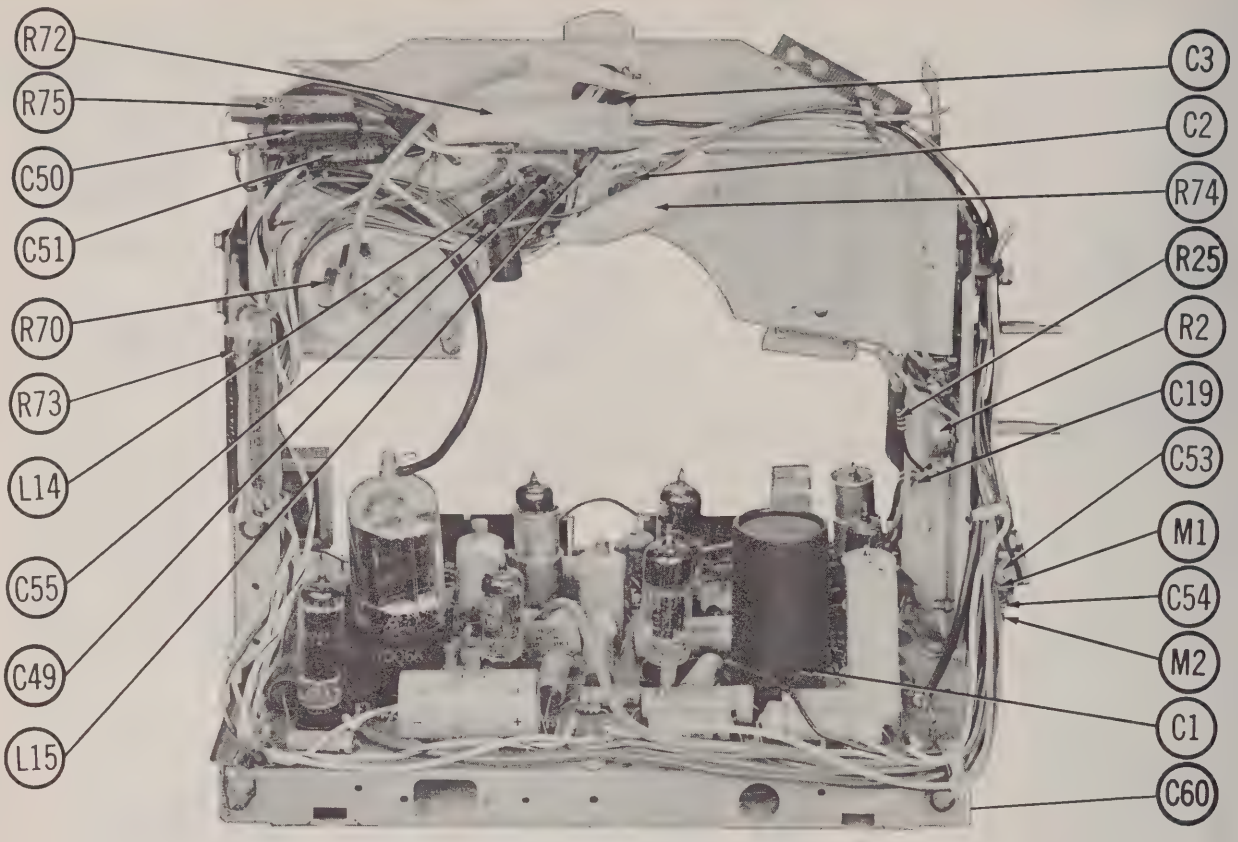
NAME	PART NO.	DESCRIPTION
Safety Glass	639V004H02	
Mask	610V009H02	
Knob	550V032H01	Channel Selector
Knob	550V031H05	Fine Tuning, Model GTM-4200A
Knob	550V050H02	Fine Tuning, Model GTM-4300A
Knob	550V054H03	On-Off-Volume
Knob	550V054H04	Picture
Dial	550V029H05	UHF
Handle	558V074H03	Includes antenna
Cabinet	510V015H01	Model GTM-4200A
Cabinet	510V015H02	Model GTM-4300A

WIRING DATA

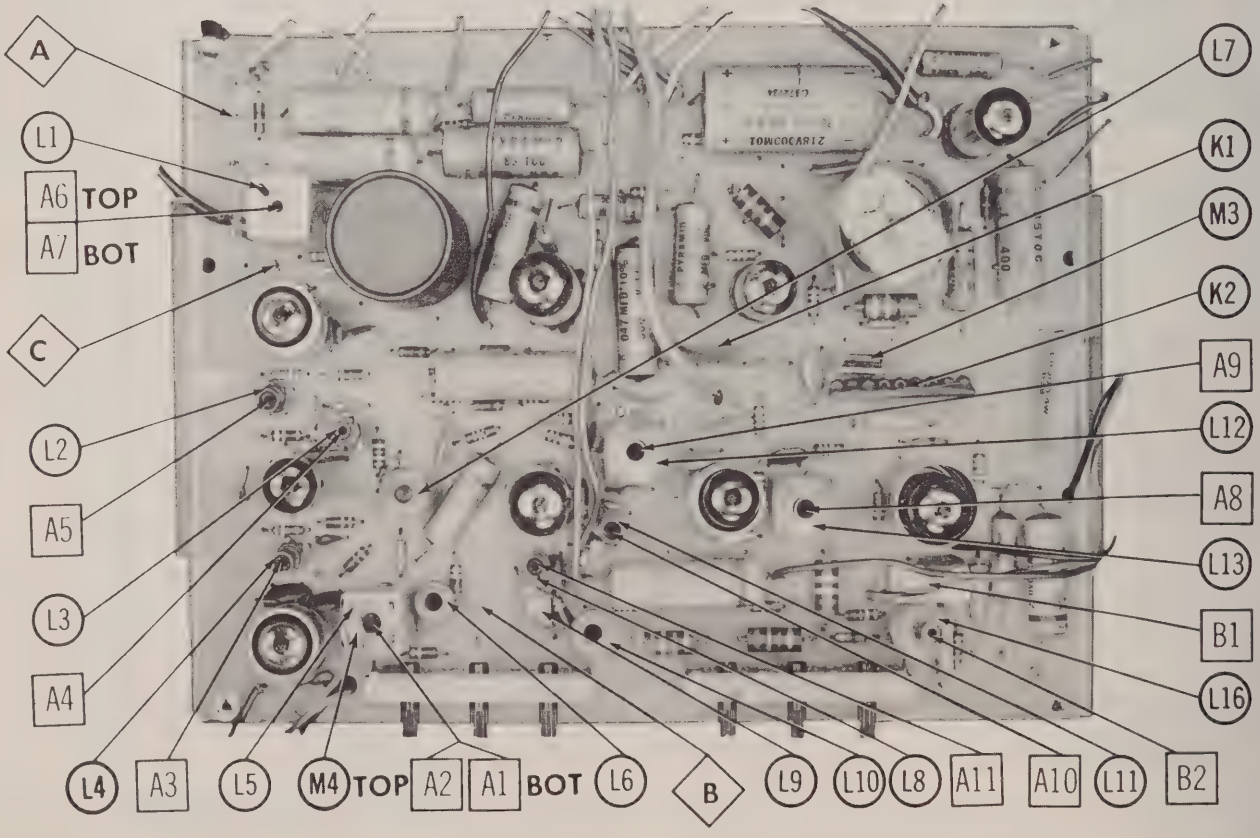
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8226
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

AIRLINE MODELS GTM-4200A, GTM-4300A

FOLDER 1



CHASSIS FRONT VIEW



INDUCTOR & ALIGNMENT IDENTIFICATION

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	3BN4	
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120			BPD-00012	DD-121	L10T12	ED-120	UC-5312	5GA-T12	
C202	30									5%
C203	15				TCZ-15	C10Q15C	TCO-15		5TCC-Q15	5%
C204	15				TCZ-15	C10Q15C	TCO-15		5TCC-Q15	5%
C205	5			NPO-DI 5	TCZ-4R7	C10V5C	TCO-5	ZT-555	5TCCB-V5	5%
C206	2-8									
C207	800									
C208	47									
C209	800									
C210	51			NPO-DI 50	TCZ-51	C10Q51C	TCO-51	ZT-545	5TCC-Q5	10%
C211	2-6									
C212	1.0			NPO-SI 1.0	TCZ-1		TCO-1		5TCCB-V1	①
C213	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C214	10			NPO-DI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	5%
C215	10			NPO-DI 10	TCZ-10	C10Q1C	TCO-10	ZT-541	5TCC-Q1	5%
C216	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C217	85									
C218	800									
C219	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C220	800									
C221	2-6									

① Some versionss may use 1.5mmf in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R201	4700Ω			
R202	1000Ω			
R203	10K			
R204	220K			

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R205	1000Ω			
R206	10K			
R207	10K			
R208	5600Ω			

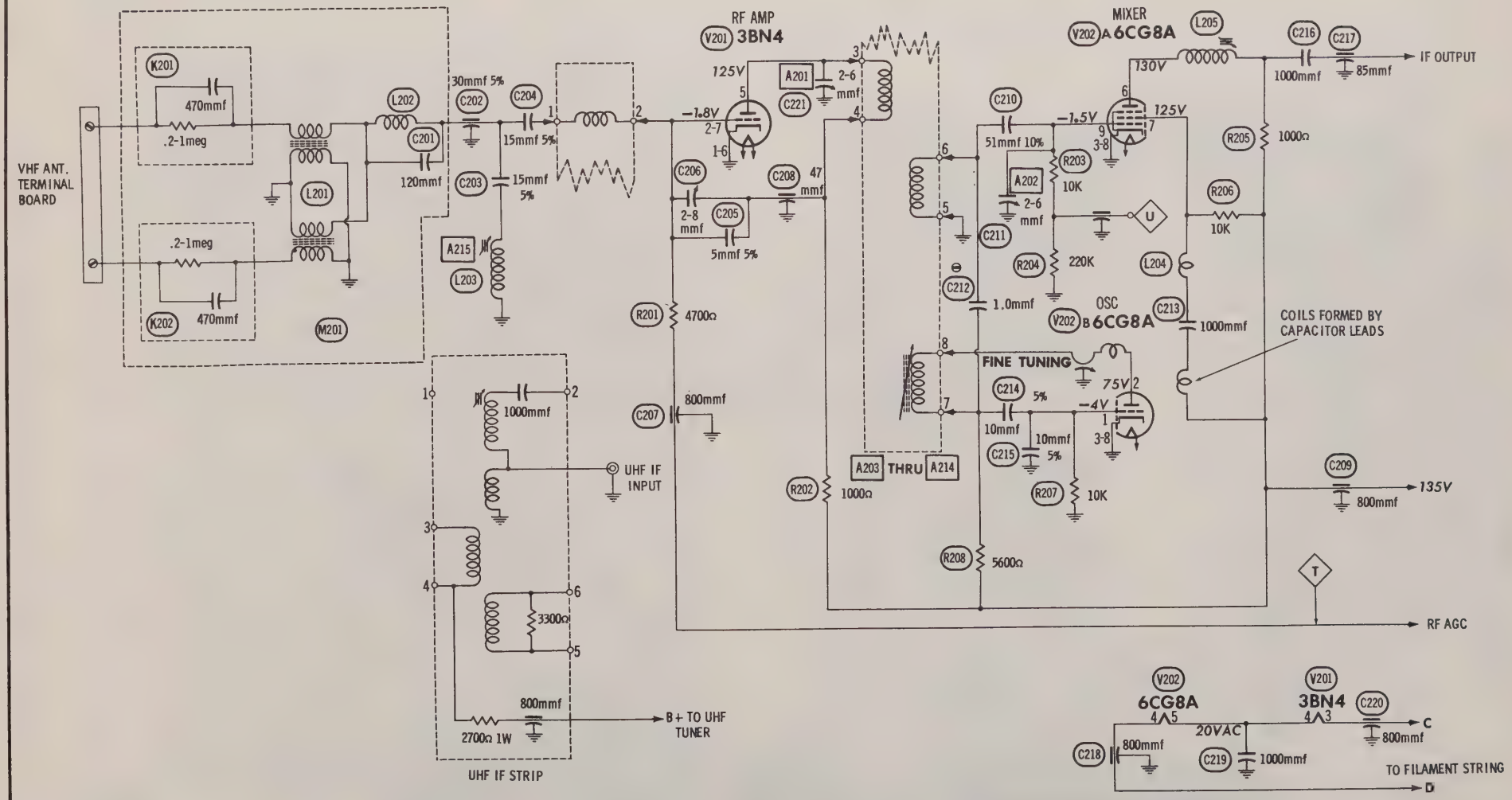
COILS (RF-IF)

ITEM No.	USE	AIRLINE PART No.	NOTES
L201	Ant. Trans.		
L202	IF Trap Coil		
L203	IF Trap Coil		

ITEM No.	USE	AIRLINE PART No.	NOTES
L204	RF Choke		
L205	Mixer Plate Coil		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg		Centralab	RC-471
K202	Antenna Isolation	470mmf, .2-1meg		Sprague	R-9197



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

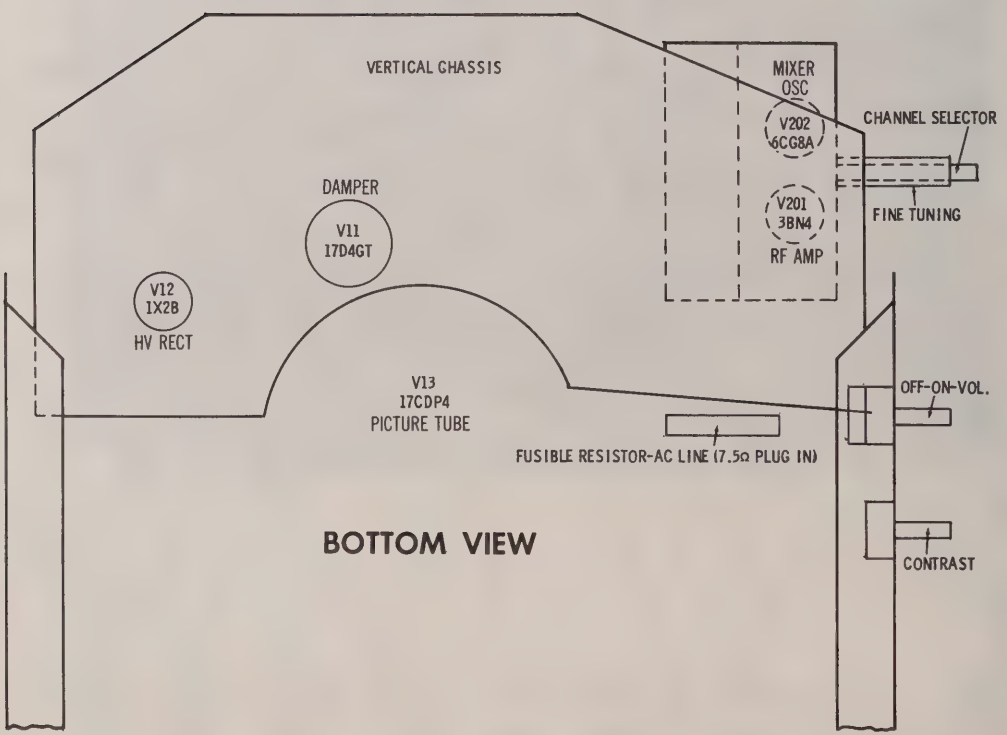
VHF TUNER PART #470V040H01 (Code 305) & UHF-VHF TUNER #470V041H01 (Code 305)

RESISTOR IDENTIFICATION

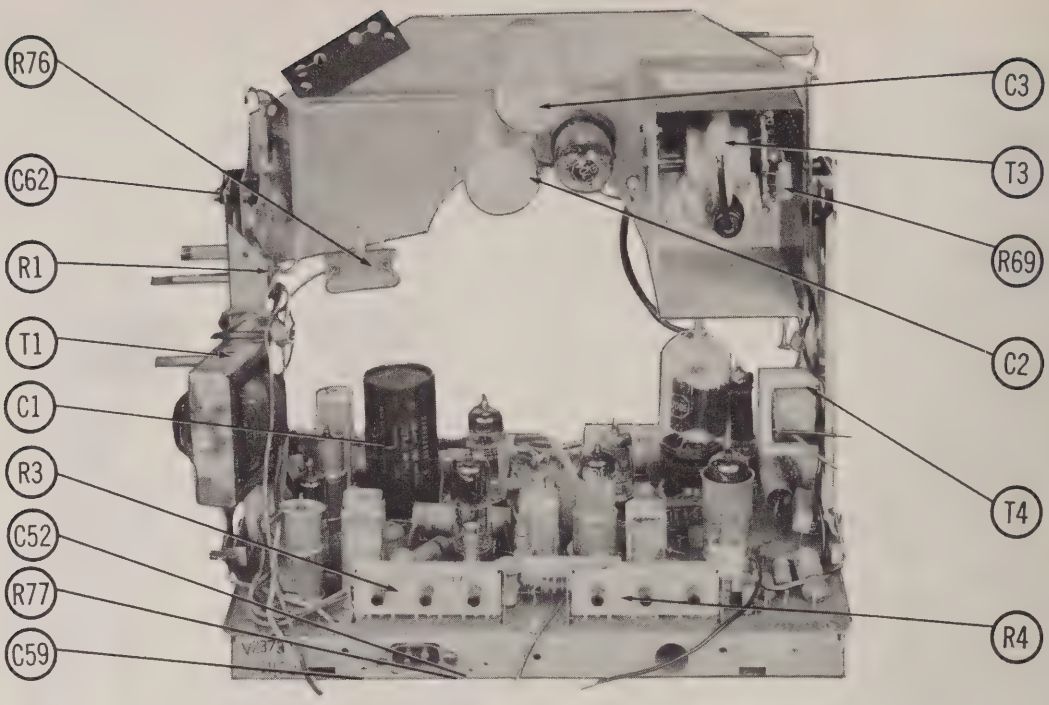
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BZ6	480K	47Ω	11Ω	10Ω	†2500Ω	†2500Ω	0Ω		
V2	4BZ6	480K	47Ω	10Ω	9Ω	†2500Ω	†2500Ω	0Ω		
V3	4CB6	.1Ω	150Ω	9Ω	8Ω	†2500Ω	†2500Ω	0Ω		
V4	8AU8	0Ω	100K	†49K	14Ω	11Ω	22Ω	300K	†2000Ω	†4400Ω
V5	4BN6	•200Ω	.2Ω	17Ω	18Ω	†22K	6Ω	†330K		
V6	6AQ5A	0Ω	68Ω	23Ω	25Ω	†1840Ω	†2000Ω	0Ω		
V7	4CS6	27K	0Ω	19Ω	18Ω	†33K	†12K	3.2meg		
V8	8CS7	‡3200Ω	NC	•1.2meg	14Ω	17Ω	†460K	•1.1meg	0Ω	100Ω
V9	8CG7	†57K	• 200K	1000Ω	0Ω	2.5Ω	†57K	2.5meg	1000Ω	0Ω
V10	17DQ6A	NC	19Ω	NC	†7000Ω	500K	NC	23Ω	0Ω	TOP CAP ‡21Ω
V11	17D4GT	NC	NC	¶	NC	†180Ω	NC	29Ω	25Ω	
V12	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡645Ω
V13	17CDP4	2.5Ω	22K	‡500K	2000Ω	NC	NC	•170K	5Ω	
V201	3BN4	0Ω	550K	8Ω	7Ω	†3000Ω	0Ω	550K		
V202	6CG8A	10K	†7600Ω	0Ω	5Ω	7Ω	†3000Ω	†12K	0Ω	230K

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 280V SOURCE.
‡ MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short clip lead across the horizontal frequency coil (L16). This may be done from the top of the chassis.

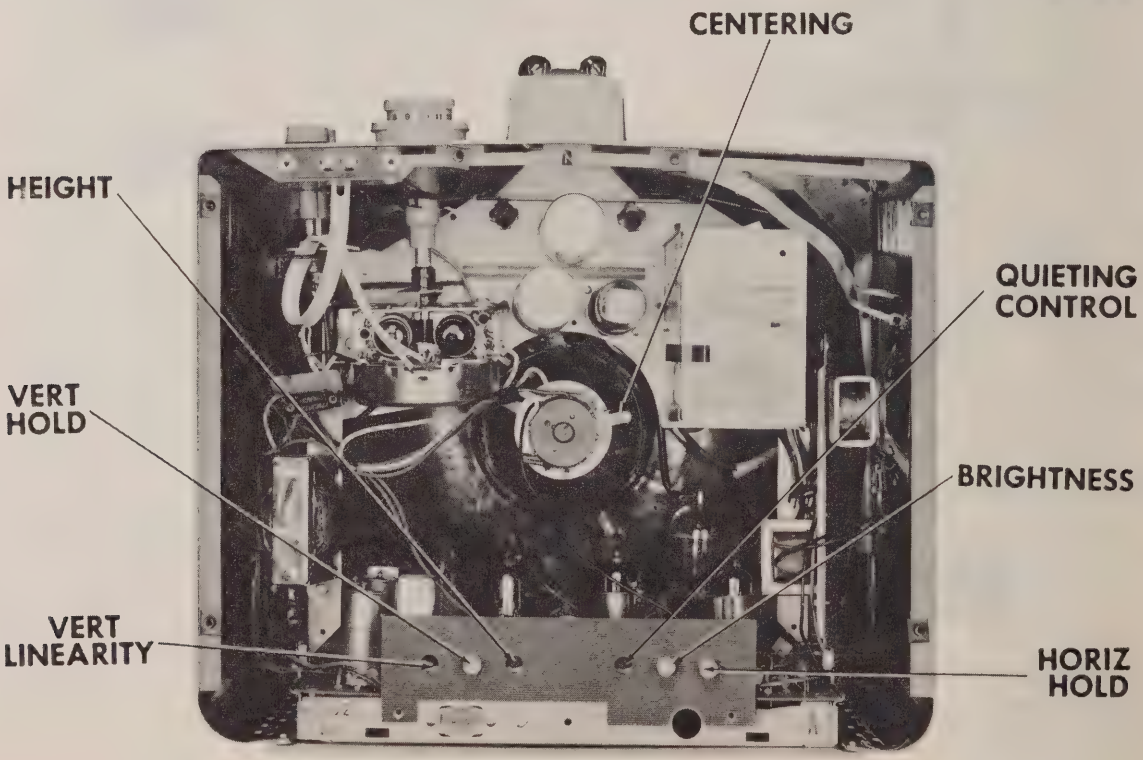
Set the horizontal hold control (R4C) to the center of its range.

Connect the DC probe of the VTVM to pin 7 (grid) of the 8CG7 (V9). Common to chassis.

With the receiver tuned to a TV station, adjust the horizontal mult trimmer (B1) for zero reading on the VTVM. If zero can be approached but not quite reached at one extreme of B1, it may be necessary to set the horizontal hold control SLIGHTLY to one side of mid-range to obtain zero reading on the VTVM.

Remove the clip lead from L16.

Adjust the horizontal frequency slug (B2) for zero reading on the VTVM and check the adjustment by switching off channel and back again. The receiver should pull into synchronization on all channels. If not, repeat adjustments.



CHASSIS—REAR VIEW

DISASSEMBLY INSTRUCTIONS

MODEL 17P3-2 (Ch. TS-427)

CHASSIS REMOVAL

1. Remove 7 push-on type knobs from the side and top.

2. Remove 3 metal screws from the rear cover. Remove the rear cover. NOTE: A lug for the built-in antenna is secured by one of these screws. Make certain it is reattached when the rear cover is replaced.

3. Remove the picture tube socket, yoke plug and speaker leads.

4. Remove the metal screw, located directly above the yoke, holding the center of the chassis.

5. Remove 2 chassis bolts from the bottom.

6. Partially remove the chassis. Remove the HV lead. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Motorola	MODELS	CHASSIS
		17P3-1, 17P3-2, 17P3-3	TS-427
		Y17P3-1, Y17P3-2, Y17P3-3	TS-427Y
MANUFACTURER	Motorola, Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 149 Watts, 1.4 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of the VHF oscillator it is necessary to remove the chassis from the cabinet. (See disassembly instructions.)

PICTURE TUBE SAFETY GLASS CLEANING

A special tool (Motorola Part #66T74250l or equivalent) is required to remove the 2 special screws from bottom holding the front trim. Pull front out at bottom, swing up to remove. NOTE : Use only mild soap and water with a soft cloth to clean the safety glass.

SPECIAL ADJUSTMENTS

A. Focus
The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 10 or 6 and 1.

B. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSES

One fuse is used for LV power supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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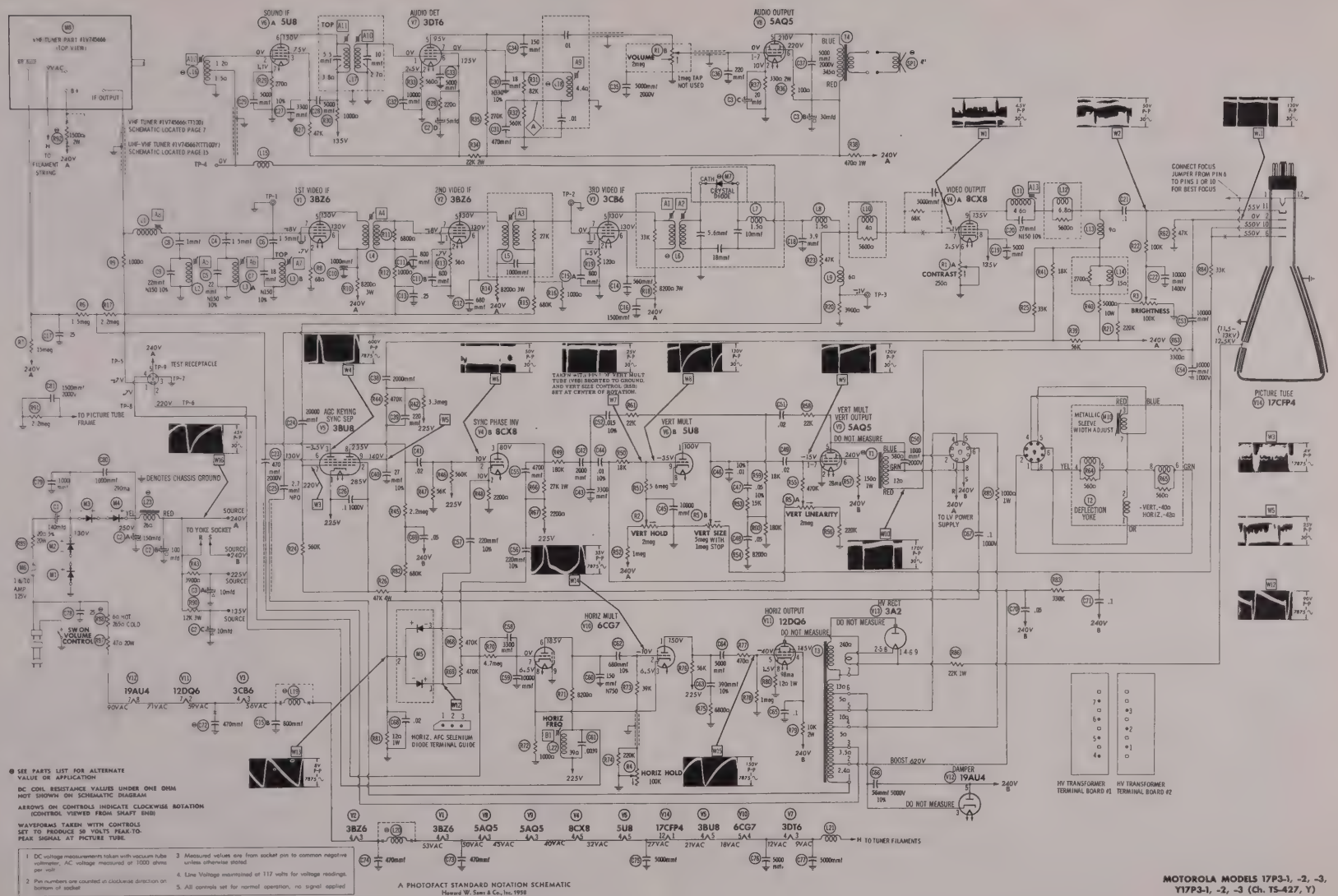
H461

MOTOROLA MODELS 17P3-1, -2, -3, Y17P3-1, -2, -3 (Ch. TS-427, Y)

MOTOROLA MODELS 17P3-1, -2, -3, Y17P3-1, -2, -3 (Ch. TS-427, Y)

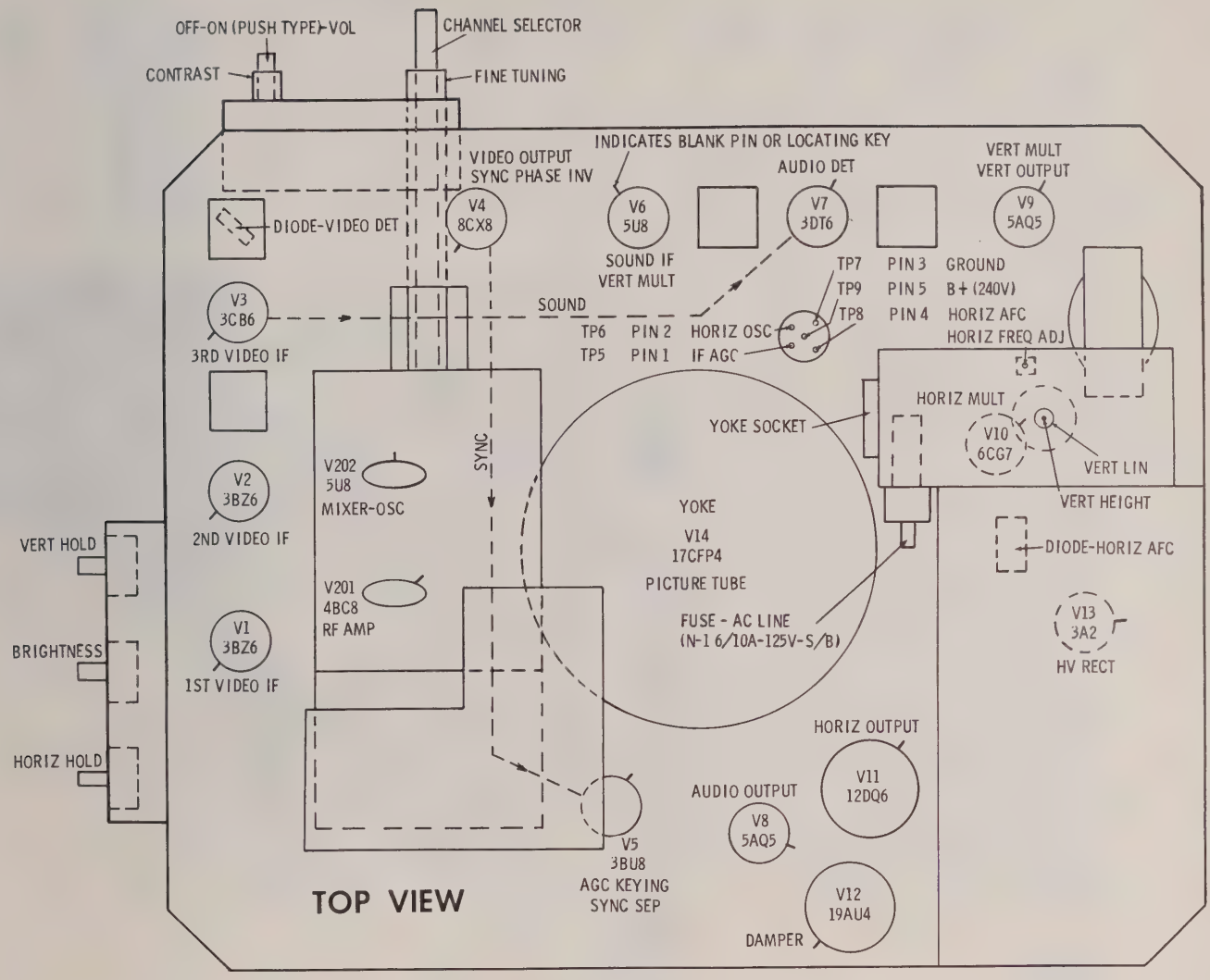
SET 401 FOLDER 2


SOUND IF V6 A 5U8
AUDIO DET V7 3DT6
AUDIO OUTPUT V8 5AQ5
VOLUME
1meg TAP NOT USED
VHF TUNER PART #1V745666 (TOP VIEW)
IF OUTPUT
TO FILAMENT STRING
VHF TUNER #1V745666(TT100) SCHEMATIC LOCATED PAGE 7
UHF-VHF TUNER #1V745667(TTT100Y) SCHEMATIC LOCATED PAGE 15
1ST VIDEO IF V2 3BZ6
2ND VIDEO IF V7 3BZ6
3RD VIDEO IF V3 3CB6
CRYSTAL DIODE
VIDEO OUTPUT V4 A 8CX8
CONTRAST
BRIGHTNESS
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 1 OR 10 FOR BEST FOCUS
PICTURE TUBE V16 17CFP4
TEST RECEPTACLE
TO PICTURE TUBE FRAME
DENOTES CHASSIS GROUND
SOURCE A
SOURCE B
TO YOKE SOCKET
SOURCE
SW ON VOLUME CONTROL
DO NOT COOL
SYNC PHASE INV V4 B 8CX8
AGC KEYING SYNC SEP V5 3BU8
VERT MULT V5 B 5U8
VERT MULT VERT OUTPUT V9 5AQ5
DO NOT MEASURE
VERT LINEARITY
VERT HOLD
VERT SIZE 5meg WITH 1meg STOP
METALLIC SLEEVE WIDTH ADJUST
DEFLECTION YOKE
VERT. 40c HORIZ. 42c
TO LV POWER SUPPLY
HORIZ MULT V16 6CG7
HORIZ OUTPUT V11 12DQ6
HV RECT V13 3A2
HORIZ FREQ
HORIZ HOLD 100K
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
BOOST 620V
DAMPER V12 19AU4
HV TRANSFORMER TERMINAL BOARD #1
HV TRANSFORMER TERMINAL BOARD #2
19AU4 V12
12DQ6 V11
3CB6 V3
3BZ6 V2
3BZ6 V1
5AQ5 V8
5AQ5 V9
8CX8 V4
5U8 V5
17CFP4 V14
3BU8 V5
6CG7 V10
3DT6 V7
M TO TUNER FILAMENTS
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

MOTOROLA MODELS 17P3-1, -2, -3, Y17P3-1, -2, -3 (Ch. TS-427, Y)

FOLDER 2

TUBE PLACEMENT CHART



MOTOROLA MODELS 17P3-1, -2, -3, Y17P3-1, -2, -3 (Ch. TS-427, Y)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

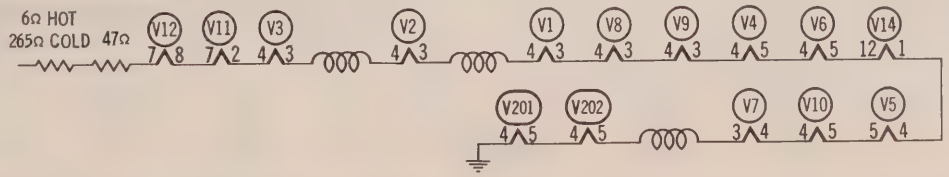
POWER SUPPLY FAILURE
No raster, no sound Rectifiers (M1, M2, M3, M4), Fuse (M6)

SWEEP FAILURE
No raster, has sound M5, V10, V11, V12, V13, V14
No vertical deflection V6, V9
Poor vert. linearity or foldover V6, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, M1, M2, M3, M4
Vert. off freq. V6, V9
Horiz. off freq. V10

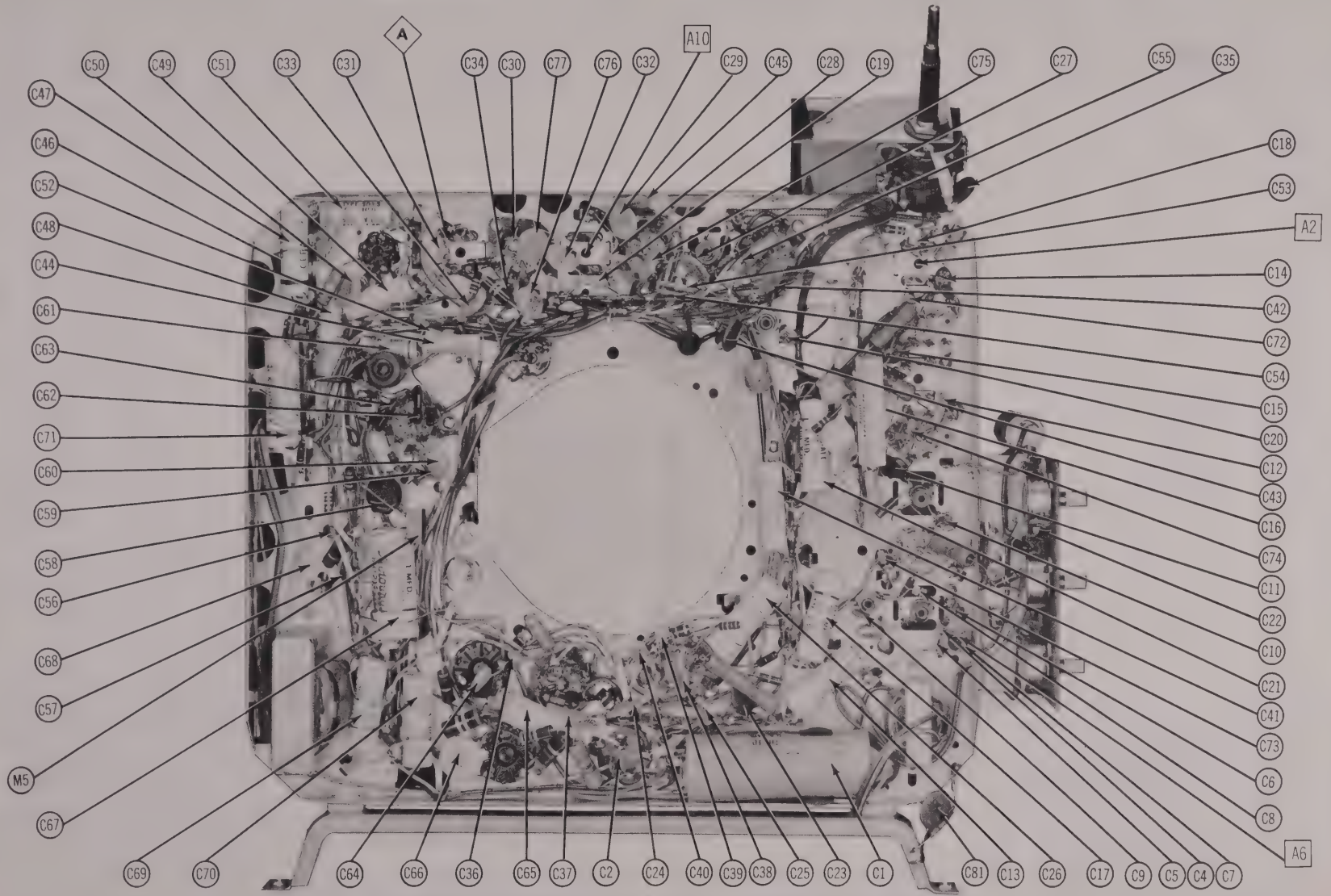
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M7)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V4
No horiz. sync V5, V4, Rectifier (M5)
No vert. or horiz. sync V5, V4

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



FOLDER 2



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Remove the deflection yoke plug from its socket and connect an 1800Ω 50 watt resistor from TP9 to TP7. Short pin 9 (grid) of Osc. (V202) to chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 6 volt bias supply to TP5.
Peak adjustments with slugs farthest from chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001mfd	High side to TP2. Low side to chassis.	44.0MC (10MC Swp)	42.25MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to TP3. Low side to chassis. (Across video det. load).	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2.	"	High side to TP1. Low side to chassis.	"	45.75MC	"	"	A3	Adjust for maximum gain at 45.75MC.
3.	"	"	"	42.25MC	"	"	A4	Adjust for maximum gain at 42.25MC.
4.	"	"	"	42.25MC 45.75MC	"	"		Check for response curve similar to Fig. 2. If necessary, retouch A1 and A2 for desired response.
5.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"		Adjust Mixer Plate Coil until its effect is out of the IF bandpass. Remove bias.
6.	"	"	"	41.25MC	"	"	A5	Adjust to place marker in trap notch. (See Fig. 3).
7.	"	"	"	47.25MC	"	"	A6	"
8.	"	"	"	39.75MC	"	"	A7	"
9.	"	"	"	42.25MC 45.75MC	"	"	Mixer Plate Coil & A8	Reconnect bias. Adjust Mixer Plate Coil and A8 for response similar to Fig. 3.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust controls for normal operation. Connect the DC probe of a VTVM to point (A). Common to chassis.
Adjust A9 for maximum deflection. Remove the VTVM connection and retouch A9 for maximum undistorted sound.
Reduce the signal strength (by either disconnecting the antenna lead of connecting an adjustable attenuator between the antenna lead and antenna terminals) until a "Hiss" similar to super-regeneration is heard in the sound. Adjust A10, A11 and A12 for maximum undistorted sound.
If necessary, repeat entire procedure.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and adjust controls for a normal picture. Set Contrast to maximum. Adjust the Fine tuning until a 4.5MC beat pattern is prominent in the picture. Starting with A13 turned fully counter clockwise, rotate slug clockwise to find the two points of strongest beat pattern. Set A13 at MINIMUM point between the two points of maximum beat. (Use as little inductance as possible to obtain a MINIMUM).

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 10, 11, 17 & 18.

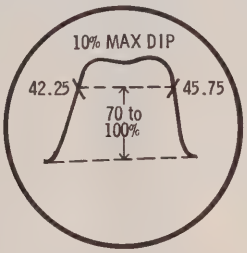


FIG. 1

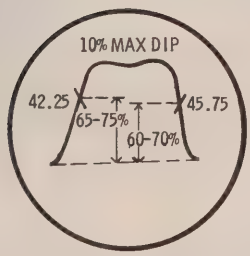


FIG. 2

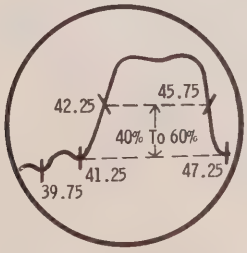
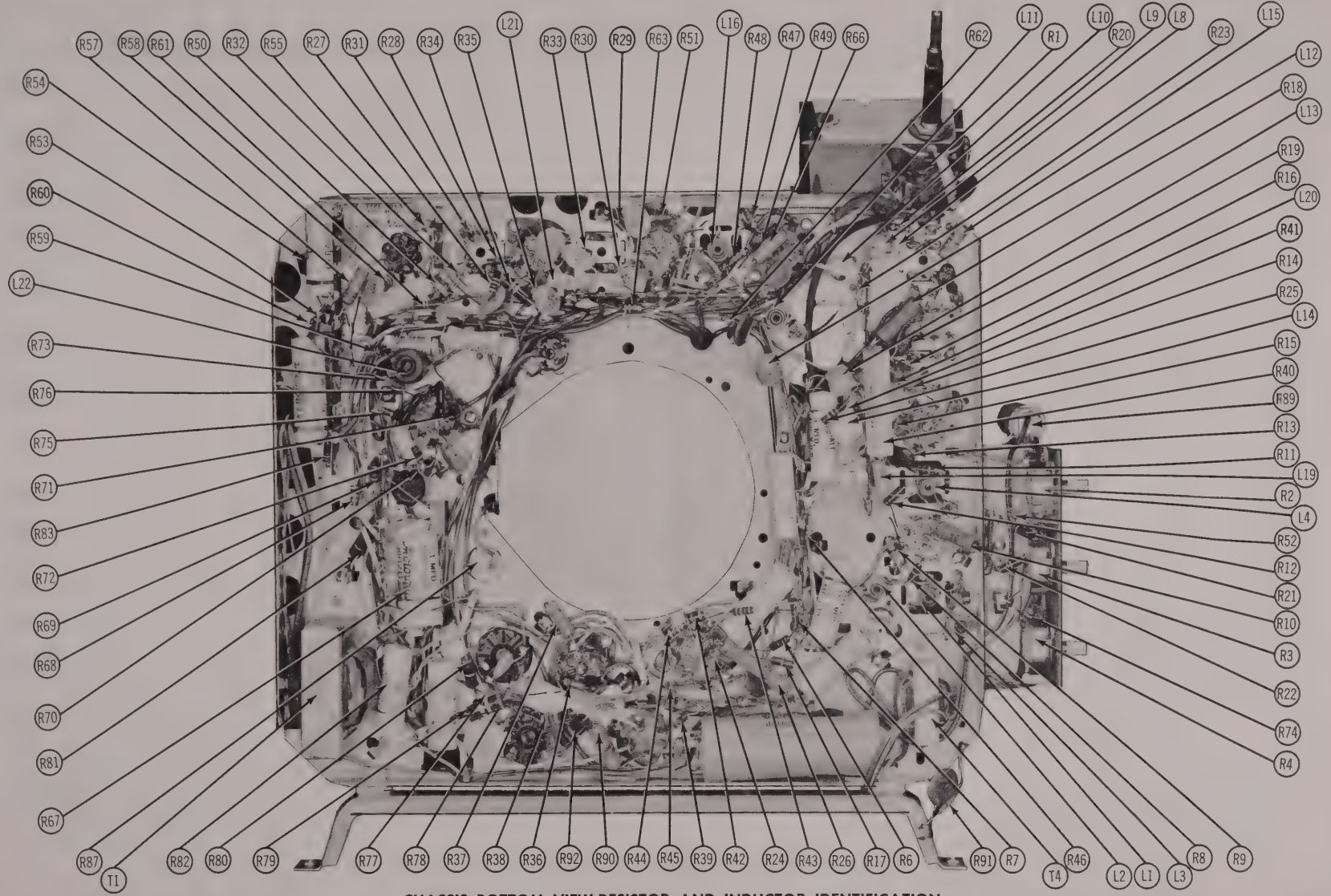
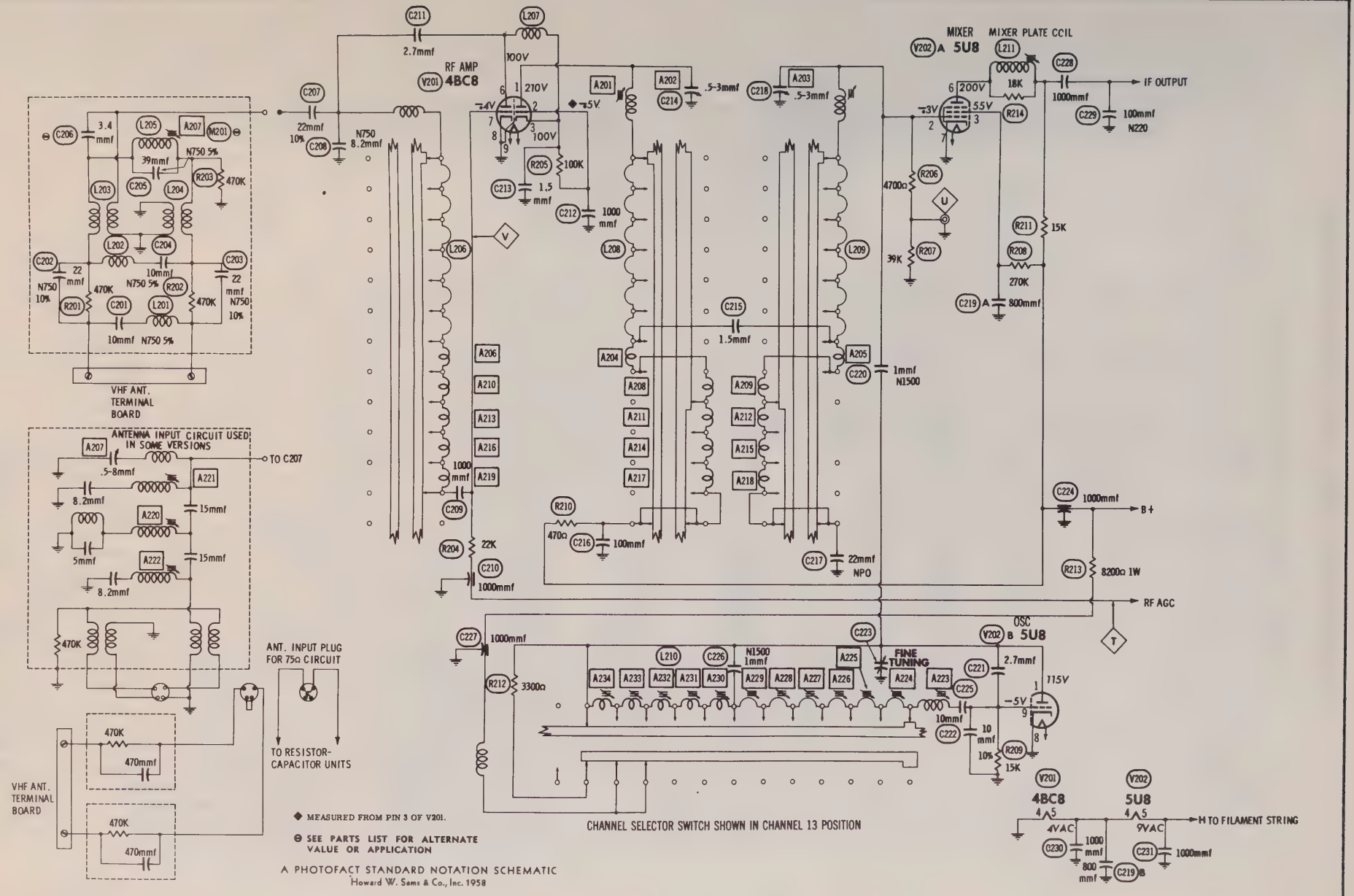


FIG. 3



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



TUNER #1V745666 (TT100)

MOTOROLA MODELS 17P3-1, -2, -3,
Y17P3-1, -2, -3 (Ch. TS-427, Y)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	4BC8	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5U8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	10		21R124553		TCN-10				N750 5%
C202	22		21R125944	N750-DI 22	TCN-22	C10Q22U		5TCU-Q22	N750 10%
C203	22		21R125944	N750-DI 22	TCN-22	C10Q22U		5TCU-Q22	N750 10%
C204	10		21R124553		TCN-10				N750 5%
C205	39		21R122051		TCN-39				N750 5%
C206	3.4		21R124489						①
C207	22		21R124554	NPO-DI 22	DD-220	L10Q22		MS-422	10%
C208	8.2		21R125856			C10V82U			N750
C209	1000		21R115386	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C210	1000		21K739920	EF-001	MFT-1000			503C-D1	
C211	2.7		21R115950						
C212	1000		21R115386	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C213	1.5		21R115959	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	
C214	.5-3		21K735985		829-3		CT565A		
C215	1.5		21R115959	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	
C216	100		21R120577	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C217	22		21R124554	NPO-DI 22	TCN-22	C10Q22C			NPO
C218	.5-3		21K735985		829-3		CT565A		
C219A	800		21R400943	BPD-0008	DD-801	L10T8		5GA-T8	
B	800			BPD-0008	DD-801	L10T8		5GA-T8	
C220	1		21R114071						N1500
C221	2.7		21R125699						
C222	10		21R410063	NPO-DI 10	DD-100	L10Q1	ZT-541	5TCC-Q1	10%
C223									
C224	1000		21K739920	EF-001	MFT-1000			503C-D1	
C225	10		21R125698	BPD-00001	DD-100	L10Q1	UC-541	5GA-Q1	
C226	1		21R124552						N1500
C227	1000		21K739920	EF-001	MFT-1000			503C-D1	
C228	1000		21R115386	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C229	100		21R124032						N220 5%
C230	1000		21R115386	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C231	1000		21R115386	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	

① Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R201	470K		6K125533	
R202	470K		6K125533	
R203	470K		6R6032	
R204	22K		6K119405	
R205	100K		6K122313	
R206	4700Ω		6K121847	
R207	39K		6K125535	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R208	270K		6R6414	
R209	15K		6K119934	
R210	470Ω		6K127633	
R211	15K		6K119934	
R212	3300Ω		6K121725	
R213	8200Ω	1	6R5610	
R214	18K		6K122848	

COILS (RF-IF)

ITEM No.	USE	MOTOROLA PART No.	NOTES
L201	IF Trap Coil	24K745828	
L202	IF Trap Coil	24K745828	
L203	Ant. Matching Coil	24C744200	
L204	Ant. Matching Coil	24C744200	
L205	IF Trap Coil	24A746143	
L206	Ant. Coils	1V743893	Channel 2-13, Wafer assy. includes C207, C208 & C209
L207	Neut. Coil	24A739397	

ITEM No.	USE	MOTOROLA PART No.	NOTES
L208	RF Coils	1V743447	Channel 2-13, Wafer Assy. includes C215, C216 & R210
L209	Mixer Grid Coils	1V738859	Channel 2-13, Wafer assy. includes C217
L210	Osc. Coils	1V743191	Channel 2-13, Wafer assy. includes C225 & C226
L211	Mixer Plate Coil	24B740435	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M201	Ant. Input Assy.	1V746007	Used in tuners coded B and C.
	Ant. Input Assy.	1V743894	Used in early production

RF TUNER-RIGHT SIDE

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER #1V745667 (TT100Y)

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Mechanically remove the tuner from the main chassis, reposition for better accessibility and attach to the chassis in this position. Make sure that a good ground is made.
Remove the yoke plug to prevent interference radiation. Connect an 1800Ω 50watt resistor from B plus to chassis.

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point Ⓣ to chassis.
Remove the tuner cover.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Perform steps 9 thru 12 or 13 (depending on the filter used) before aligning RF and Mixer.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A201	Preset A202 and A203 to mid-range. Adjust A201 for maximum gain and symmetry similar to Fig. 201.
2.	"	"	183MC	181.25MC 185.75MC	7	"	A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
3.	"	"	85MC	83.25MC 87.75MC	6	"	A204, A205, A206	Adjust in numerical order for response similar to Fig. 202. First two adjustments are for proper placing of markers. Third adjustment is for maximum gain and symmetry.
4.	"	"	"	87.75MC	"	"	A207	Adjust SLIGHTLY above point where it begins to affect response curve at sound marker.
5.	"	"	79MC	77.25MC 81.75MC	5	"	A208, A209, A210	Adjust in numerical order for response similar to Fig. 202. First two adjustments are for proper placing of markers. Third adjustment is for maximum gain and symmetry.
6.	"	"	69MC	67.25MC 71.75MC	4	"	A211, A212, A213	"
7.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215, A216	"
8.	"	"	57MC	55.25MC 59.75MC	2	"	A217, A218, A219	"

HI-PASS FILTER ALIGNMENT FOR FILTER #1V746007

Connect a clip lead from point Ⓣ to chassis.
When adjusting L201 and L202, it is necessary to remove the filter cover, but the cover must be in place when observing the response on the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	100MC	100MC	7	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A207	Readjust for MINIMUM response at 100MC marker.
10.	"	"	57MC	42.5MC	2	"	L201	Adjust for MINIMUM response at marker.
11.	"	"	"	44.5MC	"	"	L202	"
12.	"	"	"	42.5MC 44.5MC	"	"	L201, L202	Retouch either or both for flat response with MINIMUM amplitude at markers.

HI-PASS FILTER ALIGNME NT FOR FILTER #1V743894

Connect a clip lead from point Ⓣ to chassis.
Location of adjustments for this tuner are shown in Fig. 205.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	159MC	159MC	7	Vert. Amp. thru 47K to point U. Low side to chassis.	A220	Adjust for MINIMUM response at marker.
10.	"	"	112MC	112MC	6	"	A207	Readjust for MINIMUM response at markers. Detune A221 and A222 by turning slugs well into coils before proceeding to next step.
11.	"	"	57MC	42.5MC	2	"	A221	Adjust for MINIMUM response at marker.
12.	"	"	"	44.5MC	"	"	A222	"
13.	"	"	"	42.5MC 44.5MC	"	"	A221, A222	Retouch for flat response with MINIMUM amplitude at markers.

TUNER ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT FOR TUNER #1V745667 (TT100Y)

The tuner cover must be in place when adjusting the oscillator.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A223	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A224	
			201MC	199.25MC 203.75MC	11		A225	
			195MC	193.25MC 197.75MC	10		A226	
			189MC	187.25MC 191.75MC	9		A227	
			183MC	181.25MC 185.75MC	8		A228	
			177MC	175.25MC 179.75MC	7		A229	
			85MC	83.25MC 87.75MC	6		A230	
			79MC	77.25MC 81.75MC	5		A231	
			69MC	67.25MC 71.75MC	4		A232	
			63MC	61.25MC 65.75MC	3		A233	
			57MC	55.25MC 59.75MC	2		A234	

UHF IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	50Ω Carbon Resistor	High side to point (V). Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point (U). Low side to chassis.	A235, A236	Adjust for maximum gain and symmetry of response similar to Fig. 204 with markers as shown.
16.	Disconnect sweep generator and short antenna terminals.				"	USE VTVM across video detector load.	A237	Adjust for maximum DC noise voltage.

UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

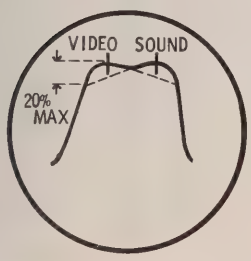


FIG. 201

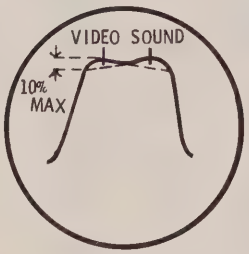


FIG. 202

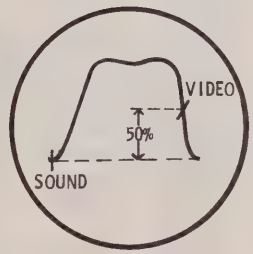


FIG. 203

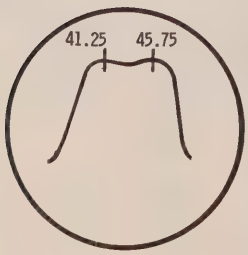


FIG. 204

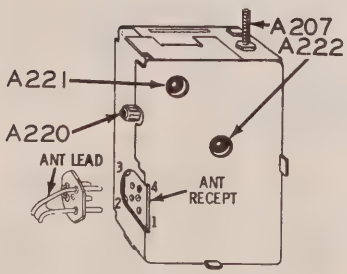


FIG. 205

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3BZ6	
V2	2nd. Video IF Amp.	3BZ6	
V3	3rd. Video IF Amp.	3CB6	
V4	Video Output-Sync Phase Sv	6CX8	
V5	AGC Keying-Sync Sep.	3BU8	
V6	Sound IF Amp.-Vert. Mult.	5U8	
V7	Audio Det.	3DT6	
V8	Audio Output	5AQ5	
V9	Vert. Mult. - Vert. Output	5AQ5	
V10	Horiz. Mult.	6CG7	
V11	Horiz Output	12DQ6	
V12	Damper	19AU4	
V13	HV Rect.	3A3	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: MOTOROLA Part No	GENERAL ELECTRIC Part No	RCA Part No	SYLVANIA Part No	NOTES
V14	17CFP4			17CFP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	MOTOROLA Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SANGAMO Part No.	SPRAGUE Part No.
C1	140	150	33B745105	AFH5I-33	ZA0461	FP17	TMS-24	D-086	TVL-1428
C2A	≋30	300	33B738745	AFH5I-02-☐ 75	D0025	FP419.55			*R2466
B	≋90	300							
C	≋10	300							
D	5	300							
C3A	≋10	300		AFH3-108	C0810	FP330	TMT-93	T-475	TVL-3635.5
B	≋30	300							
C	≋0	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT.	MOTOROLA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C4	1.5		21R115869	MPO-81 1.5	TCZ-1R5	C10V15C	ZT-5S15	5TCCB-V15	
C5	22		21R110539						N150 10%
C8	1.5		21R115959	MPO-81 1.5	TCZ-1R5	C10V15C	ZT-5S15	5TCCB-V15	
C7	18		21R120578						N150 10%
C8	1		21R115956	NPO-SI 1.0	TCZ-1				
C9	22		21R120539						N150 10%
C10	1000		21K737436	EF-05	MFT-1000				503C-DI
C11A	800		21R400943	BPD-0008	DD-801	L10T8			5GA-T8
B	800			BPD-0008	DD-801	L10T8			5GA-T8
C12	680		21R410134	BPD-00068	DD-681	BYA10T68	UC-5368		5GA-T68
C13	25	100	31K24370	P288N-25		CUB2P25	GEM-2025		2TM-P25
C14	560		21R120559	DE-0056	DD-561	L10T56	UC-5356		5GA-T56
C15A	800		21R400943	BPD-0008	DD-801	L10T8			5GA-T8
B	800			BPD-0008	DD-801	L10T8			5GA-T8
C16	1500		21R120100	BPD-0015	DD-152	BYA10D15	DC5215		5HK-D15
C17	.25	100	31K24570	P288N-25		CUB2P25	GEM-2025		2TM-P25
C18	3.9		21R115253						
C19	5000		31A738248	BPD-005	DD-502	BYA10D5	DC525		5HK-D5
C20	27		21R123050						
C21	.1	400	SR121006	P488N-1		DF-104	CUB4P1	GEM-401	4TM-P1
C22	10000	1400	21R124533	DAC-37		DI16-103	HVI16SI		37GA-P10
C23	470	2000	21R121478	HVD-30-470		DD30-471	HVB20T47	DC30347	20HEB-T5
C24	20000		31A741963	BPD-02		DD-203	BYB5S2		5HK-S2
C25	2.7		21R125499						NPO
C26	.1	1000	SR121781	P1088N-1			CUB10P1		10TM-P1
C27	3300		21K127855				1RSD33		MS-333
C28	15000		21R124475	BPD-006	DD-502		BYA10D6	DC525	5HK-D6
C29	5000		21A738246	BPD-005	DD-502		BYA10D5	DC525	5HK-D5
C30	18		21R125831						N330 10%
C31	470		21R410131	BPD-00047	DD-471		BYA10T47	UC-5347	5GA-T47
C32	10000		21K738700	BPD-01	DD-103		BYA5S1	DC5I1	5HK-S1
C33	5000		21R124475	BPD-005	DD-502		BYA10D5	DC525	5HK-D5
C34	150		21R121218	BPD-0001S	DD-151		L10T15	UC-5315	5GA-T15
C35	5000	2000	21R120093		DD30-502		HVC20D5		BL-D50
C36	220		21R410115	BPD-00023	DD-231		L10T22	UC-5322	5GA-T22
C37	5000	2000	21R120095		DD30-502		HVC20D5		2L-D50
C38	2000		21R121106	BPD-003	DD-203		BYA10D3	DC523	5HK-D2
C39	220		21R410115	BPD-00022	DD-221		L10T22	UC-5322	5GA-T22
C40	27		21R119696		TCZ-27		CUQ27C		10%
C41	.02	800	9R123079	P488N-02	DD-203		CUB6S2	GEM-612	6TM-S2
C42	2000		21R121106	BPD-002	DD-202		BYA10D2	DC523	5HK-D2
C43	3300		21R120422	BPD-0033	DD-332		BYA10D33	UC-5333	5GA-D33
C44	.01	400	9K739259					GEM-1611	10%
C45	10000		21R482726	BPD-01	DD-103		BYA5S1	DC5I1	5HK-S1
C46	.01	600	SR123286					GEM-1811	10%
C47	.05	600	SR122288					GEM-1815	10%
C48	.05	300	SR121005	P288N-05	DF-503		CUB2S5	GEM-515	2TM-S5
C49	.02	800	SR123079	P488N-02	DF-203		CUB6S2	GEM-612	6TM-S2
C50	1000	2000	21R124454	HVD-30-1000		DD30-102	HVB20D10	DC3021	
C51	.02	800	SR123079	P488N-02	DD-303		CUB6S2	GEM-612	6TM-S2
C52	.015	400	9K737432						10%
C53	10000		21R121946	BPD-01	DD-103		BYA5S1	DC5I1	5HK-S1
C54	10000	1000	21R123789	DAC-37		DI16-103	HVI16SI		BL-S10
C55	4700		21R120249	BPD-0047	DD-472		BYA10D47	UC-5347	5GA-D47
C56	220		21R125999		D6-221		L10T22		MS-322 10%
C57	220		21R125999		D6-221		L10T22		MS-322 10%
C58	3300		21R120422	BPD-0033	DD-332		BYA10D33	UC-5333	5GA-D33
C59	10000		21R410137	BPD-01	DD-103		BYA5S1	DC5I1	5HK-S1
C60	150		21B745777	N750-DI 150	DTN-150		C10TIU		5TCU-T15 N750
C61	.0039	400	FK13994						
C62	680		21K736046	1464-00068	DE-680		1RST6S		MS-368 10%
C63	390		21R725797		D6-391		5RST39		MS-339 10%
C64	5000		21R123271	BPD-005	DD-502		BYA10D5	DC525	5HK-D5
C65	.1	400	SR121006	P488N-1	DF-104		CUB4P1	GEM-401	4TM-P1 10%
C66	56	5000	21R125538						
C67	.1	1000	SR121781	P1088N-1			CUB10P1		10TM-P1
C68	.02	400	SR121566	P488N-02	DD-303		CUB4S2	GEM-412	4TM-S2
C69	.05	600	SR123285	P688N-05	DF-503		CUB6S5	GEM-615	6TM-S5
C70	.05	800	SR123285	P488N-05	DF-503		CUB6S5	GEM-615	6TM-S5
C71	.1	600	SR121859	P688N-1	DF-104		CUB6P1	GEM-601	6TM-P1
C72	470		21R114584	BPD-00047	DD-471		BYA10T47	UC-5347	5GA-T47 ①
C73	470		21R114584	BPD-00047	DD-471		BYA10T47	UC-5347	5GA-T47
C74	470		21R114584	BPD-00047	DD-471		BYA10T47	UC-5347	5GA-T47
C75	5000		21R115313	BPD-005	DD-502		BYA10D5	DC525	5HK-D5
C76	5000		21R115313	BPD-005	DD-502		BYA10D5	DC525	5HK-D5

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	MOTOROLA Part No	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No	SPRAGUE Part No	NOTES
C77	5000		21R115312	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C78	25	400	SR121788	P488N-25		CUB4P25	GEM-4025	4TM-P25	
C79	1000		21R115396	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C80	1000		21R410137	BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C81	1500	2000	21R124121	HVD-30-1500	DD30-152	HVB20D15	DC30215		

① Not used in chassis coded lower than A-06.

CONTROLS

ITEM No	RATING: RESIST.	WATTS	MOTOROLA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	250Ω	½	18C743644				UR117S Not Req.	Contrast
B	2meg	½					Not Req.	Volume with 1meg tap
C	Switch						Not Req.	
R2A	2meg	½	18K740683	B-7S	A47-2meg-S	QU-139	TA35L	Vert. Hold
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R3A	100K	½	18C740680	B-40	A47-100K-S	QU-138	TA15L	Brightness
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R4A	100K	½	18C740680	B-40	A47-100K-S	QU-138	TA15L	Horiz. Hold
B	Shaft			Not Req.	K28-3	Not Req.	Not Req.	
R5A	2meg	½	18B741520	F1-67			U121SL * Not Req.	Vert. Lin.
B	5meg	½		R2-53 *				Vert. Size with 1meg stop

* Use a 1meg resistor in series with the right hand terminal of the 5meg section.
* "Concentrikit" Equivalent: Base Elements & Shafts Bil-139, P9-021 (Panel)
Bil-141, Ril-038 (Rear) *

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	MOTOROLA Part No.	NOTES
R6	1.5meg		6K127000	
R7	15meg		6K125691	
R8	68Ω		6R2039	
R9	1000Ω		6R5301	
R10	8200Ω	3	17K738283	
R11	6800Ω		6K119930	
R12	1000Ω		6R5301	
R13	56Ω			
R14	8200Ω	3	17K738283	
R15	680K		6R6475	
R16	1000Ω		6K121301	
R17	2.2meg		6K127001	
R18	8200Ω	3	17K738283	
R19	120Ω		6R5561	
R20	3900Ω		6K121291	
R21	220K		6K123222	
R22	100K		6K125534	
R23	47K		6K121299	
R24	560K		6R5697	
R25	33K		6K121704	
R26	47K	4	17K743157	
R27	47K		6K121299	
R28	220Ω		6K125471	
R29	270Ω		6K121303	
R30	1000Ω		6R5301	
R31	62K		6K125179	
R32	560K		6R5697	
R33	5600Ω		6K123902	
R34	22K	3	6K120474	
R35	270K		6R6414	
R36	100Ω		6K119403	
R37	330Ω	2	6R486037	
R38	470Ω	1	6R5503	
R39	56K		6K127541	
R40	5000Ω	10	17K741078	
R41	18K		6K122648	
R42	3.3meg		6K122178	
R43	3900Ω		6K121291	
R44	470K		6K122279	
R45	2.2meg		6R3927	
R46	560K		6R5697	
R47	56K		6K127541	
R48	2200Ω		6R6069	
R49	180K		6K125531	

ITEM No.	RATING: OHMS	WATT	MOTOROLA Part No.	NOTES
R50	180Ω		6K122646	
R51	5.6meg		6R3988	
R52	1meg		6K124494	
R53	15K		6K119934	
R54	8200Ω		6K119931	
R55	470K		6K119406	
R56	220Ω		6K123232	
R57	150Ω	1	6R6330	
R58	22K		6K119935	
R59	18K		6K122645	
R60	180K		6K125531	
R61	22K		6K123232	
R62	47K		6K121667	
R63	3300Ω		6K121725	
R64	560Ω		6K122802	
R65	560Ω		6K122802	
R66	27K	1	6K121901	
R67	2200Ω		6R6069	
R68	470K		6K121279	
R69	470K		6K121279	
R70	4.7meg		6K121277	
R71	6200Ω		6K119931	
R72	1000Ω		6K121301	
R73	39K		6K400076	
R74	330K		6K123232	
R75	6800Ω		6K119930	
R76	56K		6K127541	
R77	470Ω		6K127533	
R78	1meg		6K124494	
R79	10K	2	6K119932	
R80	12Ω	1	6K127508	
R81	15Ω	1	6K127508	
R82	680K		6R6074	
R83	330K		6R3096	
R84	33K		6K121704	
R85	1000Ω	1	6K124480	
R86	22K	1	6K123194	
R87	47Ω	20	17K743474	
R88	6Ω Hot 265Ω Cold		6K746412 ①	
R89	20Ω 5%	20	17K745255	
R90	12K	3	17K744537	
R91	2.2meg		6R3927	
R92	1500Ω	2		

① Chassis coded A-04 and lower use 6Ω Hot, 200Ω Cold in this application (Part #6B744336).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	MOTOROLA Part No	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No	NOTES
T1	Vert. Output	24K745059-J	Z1900 ①	A-3831		A-8146	28872 ②	A-11BX ②	
	Alt. Vert. Output	24K745059							
T2A	Yoke-Horiz. (24MH)	24K748446	DF610 ③				Y-45 ③④	Y-45 ③	
B	(90°)-Vert. (41MH)		④					④	
M9	Rear Cover & Centering Device	15C742818							
	Yoke Clamp	42K743456							
T3	Horiz. Output	24K745354							
	Primary Coil	24K745381							
	Secondary Coil	24K745382							

① Connect as auto ; use 7 to 1 turns ratio.
② Drill new mounting hole(s).
③ Use original yoke damping network and connect same as original. Use original rear cover and centering device, and width sleeve.
④ Connect same as original.
⑤ Disconnect jumper from yoke terminals #3 and #6. Disconnect jumper from yoke plug pins #7 and #8. Connect yellow lead from yoke terminal #6 to yoke plug pins #1 and #8.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	MOTOROLA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T4	5600Ω	3-4Ω	25C746165		A-3026	AU-60i ①	A-3877 ①	24851 ①	S-6X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: MOTOROLA Part No.	QUAM Part No.	NOTES
SP1	4"	PM	3-4Ω	50D741021 ①	4A07	① Manufacturer states replacement Part #50B743419.

COILS (RF-IF)

ITEM No.	USE	MOTOROLA Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	NOTES
L1	1st. Video IF	24K746440	17-4834	TV-131		VF-4	
L3	41.25MC Trap	24C736966					
L3A	47.25MC Trap	24C746502					
B	39.75MC Trap						
L4	2nd. Video IF	24K746091	17-4832	TV-130	6319	VF-3	
L5	3rd. Video IF	24K746505	17-5004 ▲	TV-135 ▲	6334 ▲		
L6	4th. Video IF	24K746504					Includes M7 - Note 1
L7	RF Choke	24A733225	19-1005	BC-586	4612		10 Microhenries
L8	RF Choke	24K737733	19-1005	BC-586	4612		10 Microhenries
L9	Shunt Peaking Coil	24C726508	19-3180	TV-184	6180	VP-8	180 Microhenries
L10	Series Peaking Coil	24K746411	19-3100 *	TV-131 *	6131 *	VP-3 *	100 Microhenries, wound on 5600Ω resistor
L11	4.5MC Trap	24B732290	20-1004	TV-151	1469 *	SF-3	
L12	Series Peaking Coil	24K740513	19-3250 *	TV-186 *	6161 *	VP-6 *	240 Microhenries, wound on 5600Ω resistor
L13	Shunt Peaking Coil	24K742117	19-3300	TV-190	6132	VP-7	330 Microhenries
L14	Shunt Peaking Coil	24K740512	19-4050 ▲	TV-307 ▲	6166 ▲		680 Microhenries, wound on 3700Ω resistor
L15	Resonant Choke	24K743727					7.5 Microhenries, IRC Part #CLA
L16	1st. Sound IF	24K746553	17-3402		1470		Note 2
L17	2nd. Sound IF	24K741646	17-3496	TV-113	6303	SF-1	
L18	Quadrature Coil	24K746490					Includes Caps. - Note 3
L19	Fil. Choke	24B743675	19-1001	BC-563	4604		1.5 Microhenries - Note 4
L20	Fil. Choke	24B743675	19-1001	BC-563	4604		1.5 Microhenries- Note 4
L21	Fil. Choke	24K743675	19-1001	BC-563	4604		1.5 Microhenries

▲ Use cap. and resistor externally.
* Parallel with 5600Ω resistor.
Note 1. Chassis coded A-04 and lower use Part #24C743767 (includes crystal diode #48C739300).
Note 2. Chassis coded A-03 and lower use Part #24B742768.
Note 3. Some versions may use Part #24K745635 which does not include the caps inside the can, but externally connected. Manufacturer states to replace with Part #24K746490.
Note 4. Not used in chassis stamped code A-05 and lower.

◆ Disregard tap.
▲ Parallel with 3700Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC.	MOTOROLA Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	NOTES
L22	39Ω		24K721065	19-1578	TV-163	6310	H-102	HS-5	11. 7-75 Millihenries

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (@ CURRENT 1000 ^\)	MOTOROLA Part No	Halldorson Part No	GENERAL ELECTRIC Part No	Merit Part No	Ram Part No	Stancor Part No.	Thordarson Part No	Triad Part No
L23	270A	26Ω	8y.	25K745052 ①	C5041 ②				C-2328 ②	26C44	C-27X ③

① Alternate Part #25K745819.
② Drill new mounting hole .

RECTIFIERS

ITEM No	RATING: CURRENT (Measured)	MOTOROLA Part No.	FEDERAL Part No.	GENERAL ELECTRIC Part No.	INTERNATIONAL Part No.	SARKES TARZIAN Part No.	NOTES
M1	.290A	48K745525 ①			1N1007 ②	SD-94A	M500 ①
M2	.290A	48K745525 ①				SD-94A	M500 ①
M3	.290A	48K745525 ①				SD-94A	M500 ①
M4	.290A	48K745525 ①			1N5007 ②	SD-94A	M500 ①
M5		48B742698 ③	1215 ③④				17T ③④

① Silicon type.
② Germanium type.
③ Selenium type.
④ Two required.

FUSES

ITEM No.	TYPE	RATING	MOTOROLA Part No. FUSE	MOTOROLA Part No. HOLDER	LITTELFUSE Part No. FUSE	LITTELFUSE Part No. HOLDER	BUSS Part No. FUSE	BUSS Part No. HOLDER
M6	N	1 6/10A 125V 9/B	65K744238	9K744239	33301.6 (N 1 6/10A-125V-8/B)	346018	N 1 6/10	HN 1 3/10 to 1 3/4

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	MOTOROLA Part No.	CBS Part No.	SYLVANIA Part No.	NOTES
M7		48K746493 ①	1N80	1N80	Video Detector (Pigtail) ① Chassis coded A-04 and lower use Part #48C739300.

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA Part No.	NOTES
M8	Tuner	1V745666	VHF (TT-100) Less tubes, Ant. Input Assy. & bracket- Ch. TS-427
	Tuner	1V745667	UHF-VHF (TT-100V) Less tubes, Ant. Input Assy. & bracket - Ch. TS-427V
	Tuner		UHF (WTT-89) - Ch. TS-427Y
M9	Centering Device	15C742818	Includes yoke rear cover
M10	Width Sleeve	14A743974	

MOTOROLA MODELS 17P3-1, -2, -3, Y17P3-1, -2, -3 (Ch. TS-427, Y)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

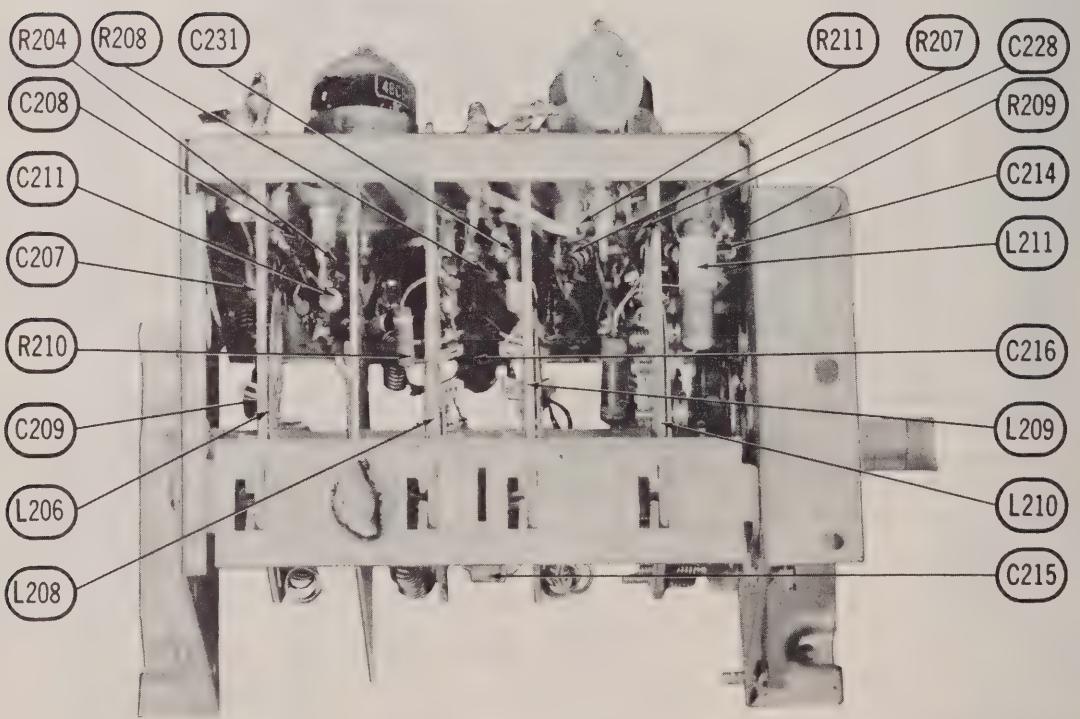
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	61D742776	
Bezel	13K745599	Models 17P3-1, Y17P3-1
Bezel	13K745994	Models 17P3-2, Y17P3-2
Bezel	13K745995	Models 17P3-3, Y17P3-3
Knob	36B742691	Contrast
Knob	36C742689	Fine Tuning
Knob	36B742692	On-Off-Volume
Knob	36B742688	Brightness
Knob	36K744034	Vert. Hold
Knob	36K744035	Horiz. Hold
Knob	36C742690	VHF Channel Selector - Models 17P3-1, 2, 3
Knob	36C742873	VHF Channel Selector - Models Y17P3-1, 2, 3
UHF Dial	34K743445	
Handle	55 E745037	
Cabinet	16K745397	Model 17P3-1, less bezel
Cabinet	16K745395	Model Y17P3-1, less bezel
Cabinet	16K745609	Model 17P3-2, less bezel
Cabinet	16K745611	Model Y17P3-2, less bezel
Cabinet	16K745990	Model 17P3-3, less bezel
Cabinet	16K745992	Model Y17P3-3, less bezel

WIRING DATA

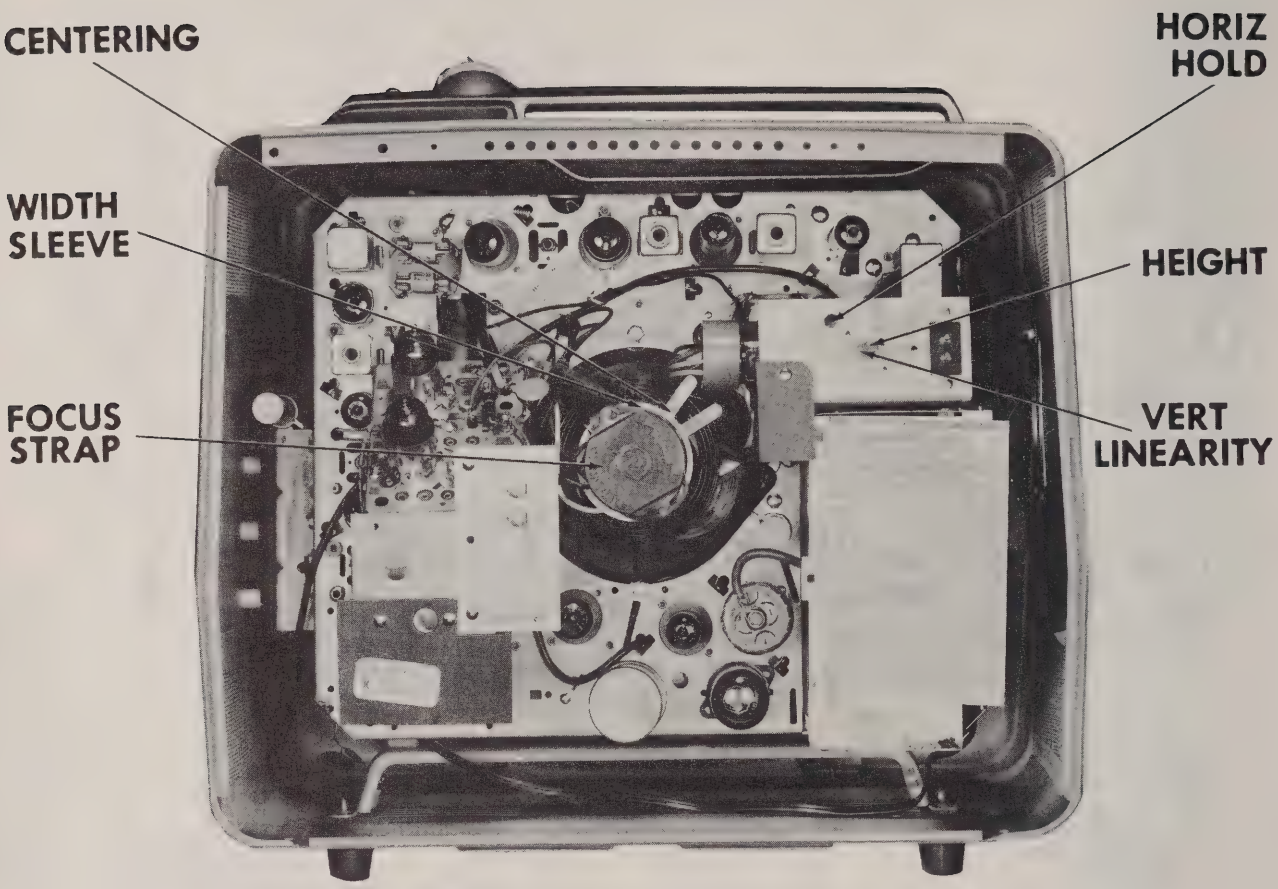
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



RF TUNER—LEFT SIDE

MOTOROLA MODELS 17P3-1, -2, -3,
Y17P3-1, -2, -3 (Ch. TS-427, Y)
TUNER #1V745667 (TT100Y)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
IF OUTPUT
MIXER PLATE COIL
MIXER
A 5U8
RF AMP
4BC8
OSC
B 5U8
FINE TUNING
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
TO UHF TUNER FILAMENTS
4BC8
5U8
H TO FILAMENT STRING
B+
RF AGC
UHF TUNER B+
UHF IF INPUT
VHF ANT. TERMINAL BOARD
A201
A202
A203
A204
A205
A206
A207
A208
A209
A210
A211
A212
A213
A214
A215
A216
A217
A218
A219
A223
A224
A225
A226
A227
A228
A229
A230
A231
A232
A233
A234
A235
A236
A237
100mmf
1000mmf
15K
18K
270K
800mmf
4700Ω
39K
1.0mmf
27mmf
.5-3mmf
1.5mmf
10K
100K
470Ω
22K
2.2mmf
6.8mmf
470K
22mmf
39mmf
22 mmf
10mmf
8200Ω
2.7mmf
10mmf
15K
800 mmf
1000 mmf
3300Ω

FOLDER 2



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Adjust the Brightness and Contrast controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from TP8 to chassis. Connect a .1mfd, 400 volt capacitor from TP6 to TP9.

Adjust Horizontal Hold to the point where the picture is almost stable horizontally.

Remove the capacitor and adjust the Horizontal Frequency slug (B1) to the point where the picture is almost stable horizontally.

Remove the clip lead from TP8 and chassis. Adjust the Horizontal Hold control until the picture is synchronized horizontally.

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER #1V745666 (TT100)

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Mechanically remove the tuner from the main chassis, reposition for better accessibility and attach to the chassis in this position. Make sure that a good ground is made.
Remove the yoke plug to prevent interference radiation. Connect an 1800Ω 50 watt resistor from B plus to chassis.

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point Ⓣ to chassis.
Remove the tuner cover.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Perform steps 9 thru 12 or 13 (depending on the filter used) before aligning RF and Mixer.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A201	Preset A202 and A203 to mid-range. Adjust A201 for maximum gain and symmetry similar to Fig. 201.
2.	"	"	183MC	181.25MC 185.75MC	7	"	A202, A203	Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown.
3.	"	"	85MC	83.25MC 87.75MC	6	"	A204, A205, A206	Adjust in numerical order for response similar to Fig. 202. First two adjustments are for proper placing of markers. Third adjustment is for maximum gain and symmetry.
4.	"	"	"	87.75MC	"	"	A207	Adjust SLIGHTLY above point where it begins to affect response curve at sound marker.
5.	"	"	79MC	77.25MC 81.75MC	5	"	A208, A209, A210	Adjust in numerical order for response similar to Fig. 202. First two adjustments are for proper placing of markers. Third adjustment is for maximum gain and symmetry.
6.	"	"	69MC	67.25MC 71.75MC	4	"	A211, A212, A213	"
7.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215, A216	"
8.	"	"	57MC	55.25MC 59.75MC	2	"	A217, A218, A219	"

HI-PASS FILTER ALIGNMENT FOR FILTER #1V746007

Connect a clip lead from point Ⓣ to chassis.
When adjusting L201 and L202, it is necessary to remove the filter cover, but the cover must be in place when observing the response on the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	100MC	100MC	7	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A207	Readjust for MINIMUM response at 100MC marker.
10.	"	"	57MC	42.5MC	2	"	L201	Adjust for MINIMUM response at marker.
11.	"	"	"	44.5MC	"	"	L202	"
12.	"	"	"	42.5MC 44.5MC	"	"	L201, L202	Retouch either or both for flat response with MINIMUM amplitude at markers.

HI-PASS FILTER ALIGNMENT FOR FILTER #1V743894

Connect a clip lead from point Ⓣ to chassis.
Location of adjustments for this tuner are shown in Fig. 204.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	159MC	159MC	7	Vert. Amp. thru 47K to point Ⓤ. Low side to chassis.	A220	Adjust for MINIMUM response at marker.
10.	"	"	112MC	112MC	6	"	A207	Readjust for MINIMUM response at markers. Detune A221 and A222 by turning slugs well into coils before proceeding to next step.
11.	"	"	57MC	42.5MC	2	"	A221	Adjust for MINIMUM response at marker.
12.	"	"	"	44.5MC	"	"	A222	"
13.	"	"	"	42.5MC 44.5MC	"	"	A221, A222	Retouch for flat response with MINIMUM amplitude at markers.

TUNER ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT FOR TUNER #1V745666 (TT100)

The tuner cover must be in place when adjusting the oscillator.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A223	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A224	
			201MC	199.25MC 203.75MC	11		A225	
			195MC	193.25MC 197.75MC	10		A226	
			189MC	187.25MC 191.75MC	9		A227	
			183MC	181.25MC 185.75MC	8		A228	
			177MC	175.25MC 179.75MC	7		A229	
			85MC	83.25MC 87.75MC	6		A230	
			79MC	77.25MC 81.75MC	5		A231	
			69MC	67.25MC 71.75MC	4		A232	
			63MC	61.25MC 65.75MC	3		A233	
			57MC	55.25MC 59.75MC	2		A234	

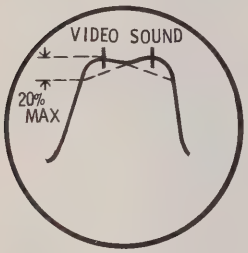


FIG. 201

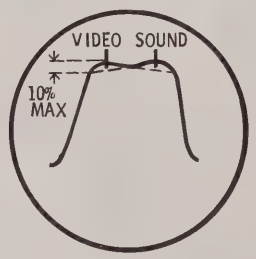


FIG. 202

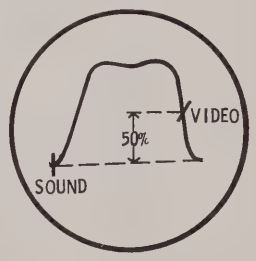


FIG. 203

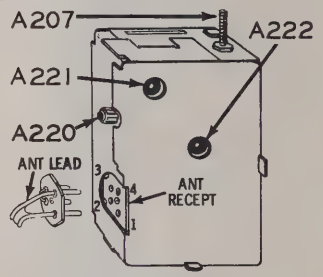
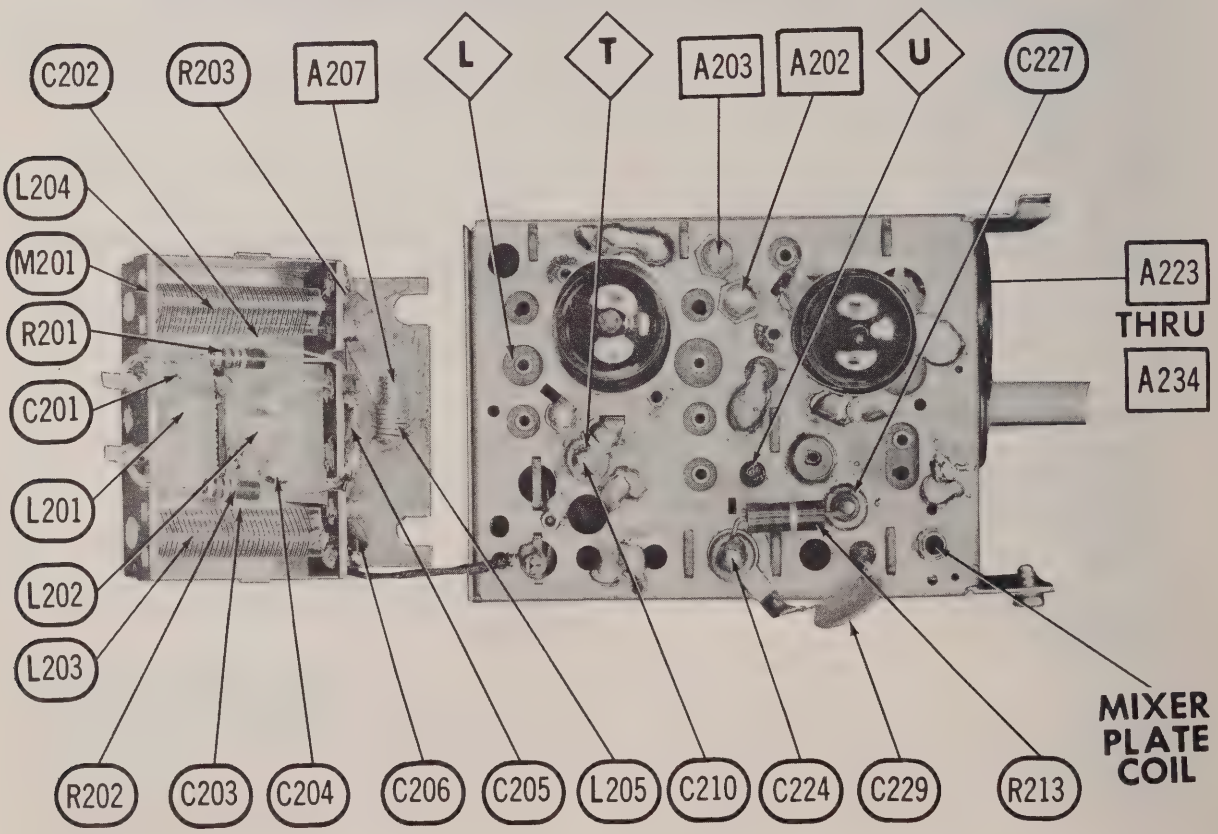
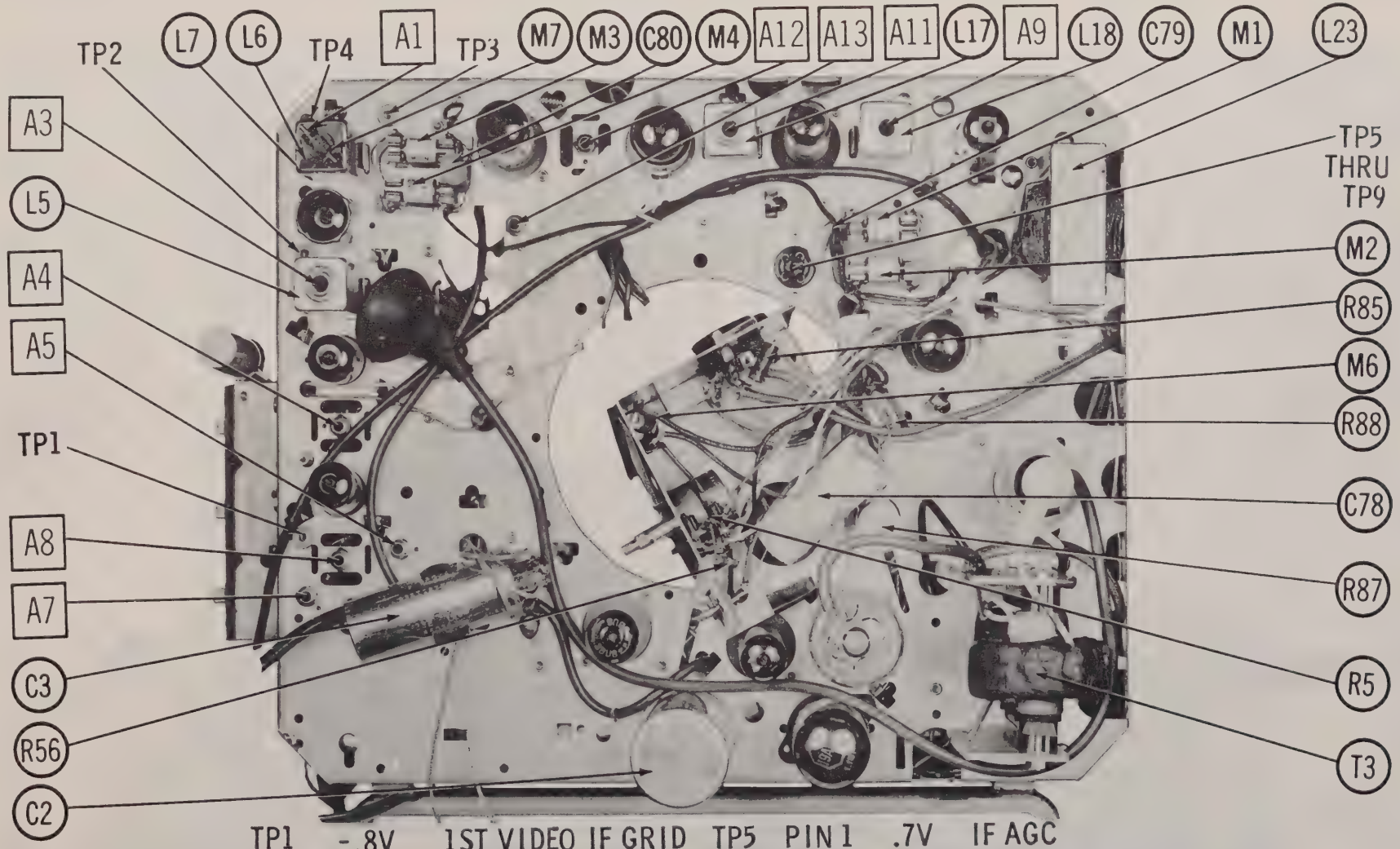


FIG. 204



RF TUNER—TOP VIEW



TP1	-.8V	1ST VIDEO IF GRID	TP5	PIN 1	.7V	IF AGC
TP2	0V	3RD VIDEO IF GRID	TP6	PIN 2	220V	HORIZ OSC
TP3	-.1V	VIDEO DETECTOR	TP7	PIN 3	0V	GROUND
TP4	0V	AUDIO TEST POINT	TP8	PIN 4	.7V	HORIZ AFC
			TP9	PIN 5	240V	B+

CHASSIS BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	570K	68Ω	10.5Ω	11.5Ω	†8200Ω	†8200Ω	0Ω		
V2	3BZ6	570K	56Ω	11.5Ω	12.5Ω	†8200Ω	†8200Ω	0Ω		
V3	3CB6	800Ω	120Ω	12.5Ω	13.5Ω	†8200Ω	†8200Ω	0Ω		
V4	8CX8	2200Ω	50K	†29K	8.5Ω	7Ω	•70Ω	3900Ω	†12K	†5000Ω
V5	3BU8	†3000Ω	‡47K	2.3meg	5Ω	4Ω	†35K	‡610K	‡2.9meg	†3.7meg
V6	5U8	•‡2.5meg	2.7Ω	†70K	7Ω	6Ω	†13K	270Ω	0Ω	•1.4meg
V7	3DT6	2.7Ω	560Ω	2Ω	2.5Ω	†270K	†22K	560K		
V8	5AQ5	0Ω	330Ω	9.5Ω	10.5Ω	†800Ω	†570Ω	0Ω		
V9	5AQ5	•1.2meg	0Ω	8.5Ω	9.5Ω	†580Ω	†150Ω	•1.2meg		
V10	6CG7	†60K	•60K	1000Ω	2.5Ω	4Ω	†11K	5meg	1000Ω	0Ω
V11	12DQ6	NC	13.5Ω	TP	†10K	1meg	TP	16Ω	12Ω	TOP CAP ‡13Ω
V12	19AU4	TP	NC	¶5meg	NC	†0Ω	TP	19Ω	16Ω	
V13	3A2		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡243Ω
V14	17CFP4	5Ω	47K	PIN 6 ‡360K	PIN 10 ‡360K	PIN 11 •250K	PIN 12 6Ω			
V201	4BC8	†1900Ω	INF	INF	0Ω	1Ω	INF	3.4meg	0Ω	0Ω
V202	5U8	†12K	44K	†270K	1Ω	2Ω	†15K	0Ω	0Ω	15K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING MAY VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

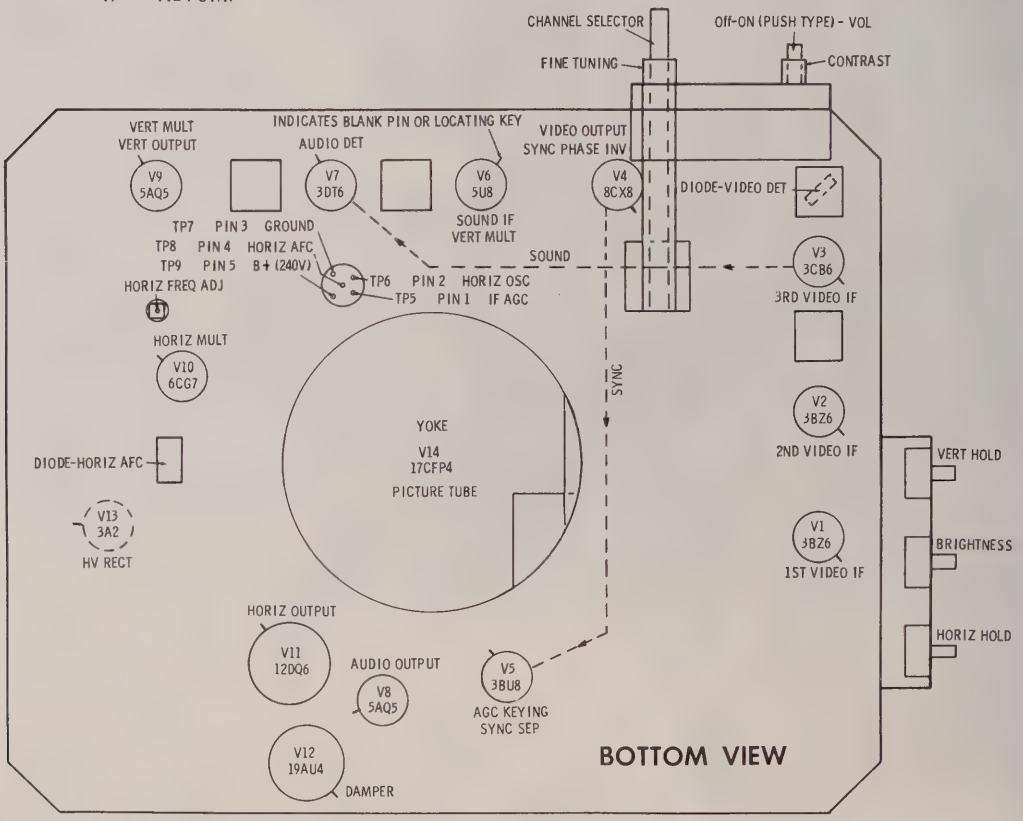
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 240V SOURCE.

‡ MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION

TP TIE POINT



TUBE PLACEMENT CHART

SPARTAN CHASSIS U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)

TRADE NAME	Spartan	CHASSIS
		U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)
MANUFACTURER	Spartan Div., 2131 Bueter Road, Fort Wayne 4, Ind.	
TYPE SET	Television Receiver	
TUBES	Nineteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 185 Watts, 1.66 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

FOCUS

The focus may be varied in steps by the position of a plug in the focus adjustment board. Readjust the ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSES

One fuse is used for Horizontal Sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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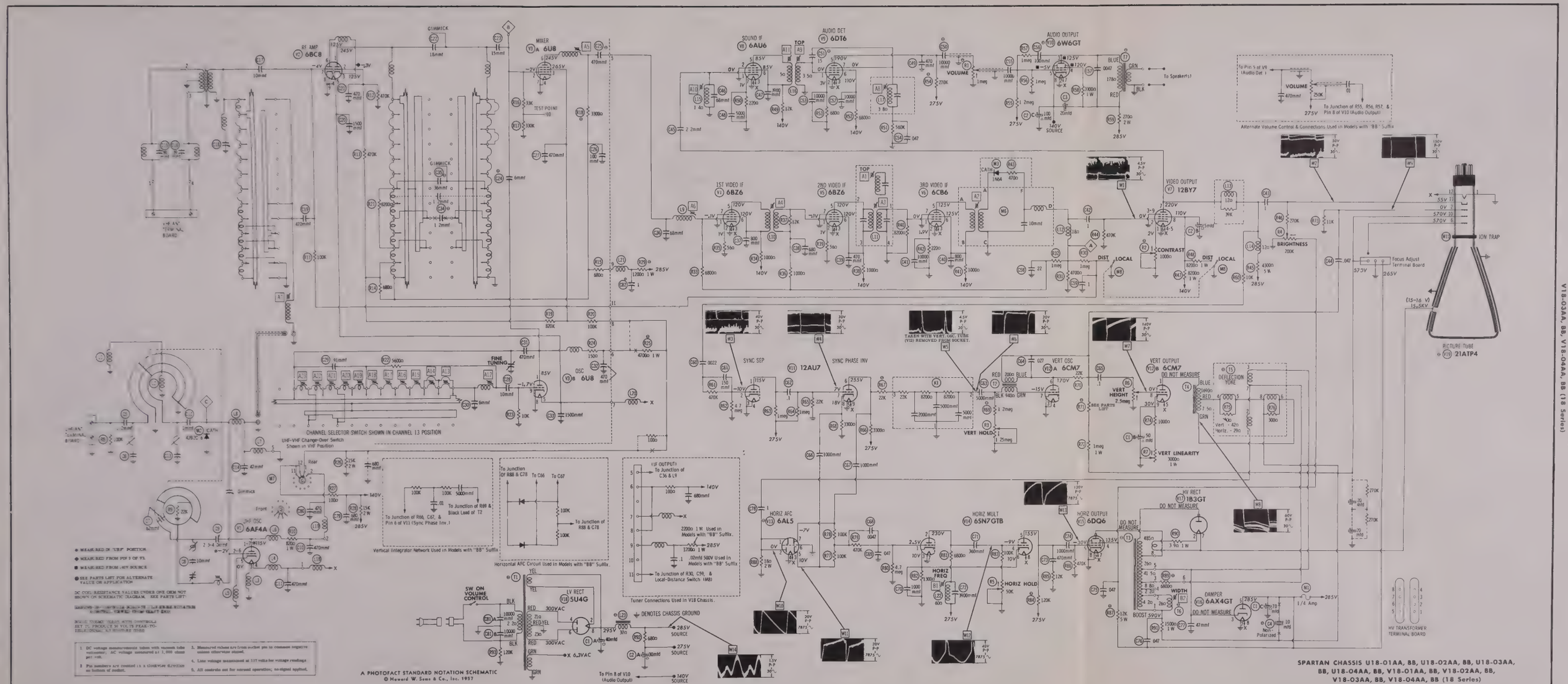
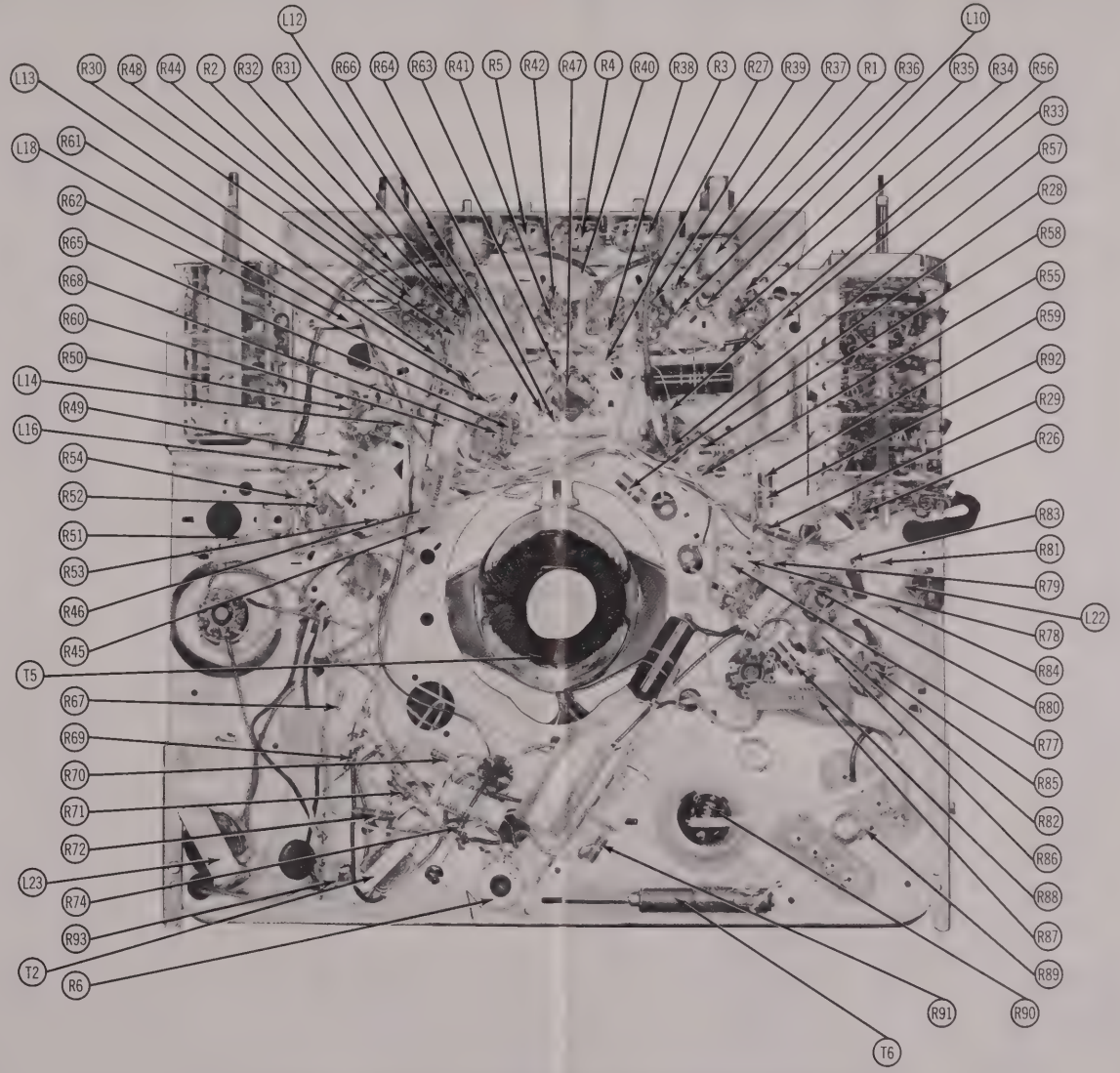
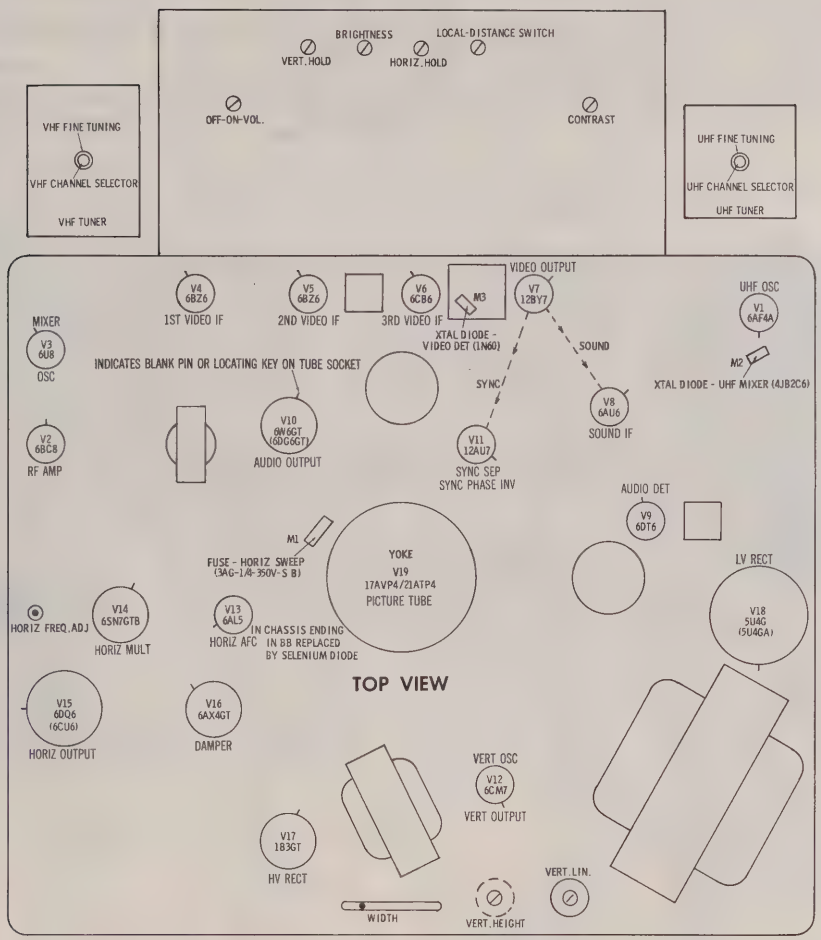
G774R


RF AMP V2 6BC8
MIXER V3A 6U8
SOUND IF V8 6AU6
AUDIO DET V9 6DT6
AUDIO OUTPUT V10 6W6GT
1ST VIDEO IF V4 6BZ6
2ND VIDEO IF V5 6BZ6
3RD VIDEO IF V6 6CB6
VIDEO OUTPUT V7 12BY7
SYNC SEP
SYNC PHASE INV V11 12AU7
VERT OSC V13A 6CM7
VERT OUTPUT V12B 6CM7
DO NOT MEASURE
HORIZ AFC V13 6AL5
HORIZ MULT V14 6SN7GTB
HORIZ OUTPUT V15 6DQ6
HV RECT V17 1B3GT
DAMPER V16 6AX4GT
LV RECT V18 5U4G
OSC V3B 6U8
UHF OSC V1 6AF4A
PICTURE TUBE V19 21ATP4
ION TRAP
FOCUS ADJUST TERMINAL BOARD
HV TRANSFORMER TERMINAL BOARD
VOLUME
CONTRAST
BRIGHTNESS
VERT HOLD
VERT LINEARITY
VERT HEIGHT
HORIZ HOLD
WIDTH
BOOST
DIST
LOCAL
FINE TUNING
SW ON VOLUME CONTROL
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
UHF-VHF Change-Over Switch Shown in VHF Position
Vertical Integrator Network Used in Models with "BB" Suffix
Horizontal AFC Circuit Used in Models with "BB" Suffix
Tuner Connections Used in V18 Chassis
Alternate Volume Control & Connections Used in Models with "BB" Suffix
TAKEN WITH VERT. OSC. TUBE (V13) REMOVED FROM SOCKET
DENOTES CHASSIS GROUND
To Speaker(s)
To Pin 8 of V10 (Audio Output)
To Pin 5 of V8 (Audio Det.)
To Junction of R55, R56, R57, & Pin 8 of V10 (Audio Output)
To Junction of R66, C67, & Pin 6 of V11 (Sync Phase Inv.)
To Junction of R99 & Black Lead of T2
To Junction of C36 & L9
To Junction of R88 & C78
To C66
To C67
To Junction of R30, C59, & Local-Distance Switch (MB)
2200Ω 1 W Used in Models with "BB" Suffix.
1200Ω 1 W
.02mfd 500V Used in Models with "BB" Suffix
285V SOURCE
275V SOURCE
140V SOURCE
6.3VAC
300VAC
120V SOURCE
UHF ANT. TERMINAL BOARD
VHF ANT. TERMINAL BOARD
◆ MEASURED IN "UHF" POSITION
◆ MEASURED FROM PIN 3 OF V3
■ MEASURED FROM 140V SOURCE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. SEE PARTS LIST.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Part numbers are control in a different section on bottom of outline.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1957
SPARTAN CHASSIS U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V18, V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, Diode (M3), V7, V10
No pic, no sound, has snow - V2, V3, V4, V1 (UHF)
No pic, has sound, has raster - V7, V19
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync - V11, V12
No horiz. sync - V11, V13 (Diode in "BB" Chassis), V14
No vert. or horiz. sync - V11

SWEEP FAILURE
No raster, has sound - V13, V14, V15, V16, V17, V19, Fuse (M1)
No vertical deflection - V12
Poor vert. linearity or foldover - V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V18
Vert. off freq. - V11, V12
Horiz. off freq. - V11, V13, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias battery to the ungrounded side of C58. Connect the negative lead of a 1.5 volt bias battery to the ungrounded side of C59. Connect the positive leads to chassis. Set the local-distant switch to local position. Turn the contrast control fully counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to grid (pin 1) of V4. Low side to chassis.	43.0MC (10MC Swp)	47.25MC	Any unused channel	Vert. Amp. thru 10K to point Ⓐ. Low side to chassis.	A1	Preset A4 by turning fully counter clockwise. Adjust to place marker in trap notch as in Fig. 1. This may be done with the slug in either of two positions. Use the one farthest from the chassis.
2.	"	"	"	42.75MC 45.75MC	"	"	A2, A3, A4	Adjust A2 for maximum gain with markers as indicated in Fig. 2. Adjust A3 to place 45.75MC at 50% on curve. Adjust A4 to place 42.75MC at 60%. Use only enough sweep generator output to provide usable pattern on scope.
3.	"	High side to point Ⓑ. Low side to chassis.	"	"	Any unused high band channel	"	A5, A6	Adjust A5 for maximum gain with 45.75MC at 45% on response curve. Adjust A6 for maximum gain and proper tilt as in Fig. 2.
4.	1000Ω	High side to point Ⓒ. Low side to tuner chassis.	"	"	UHF	"	A7	Adjust for response similar to Fig. 2 with MINIMUM tilt.

SOUND IF ALIGNMENT

Tune the receiver to a strong local TV station and adjust A8 for maximum volume and MINIMUM distortion.
Reduce the signal input by removing the antenna or by placing an attenuator between the antenna and antenna terminals so that with the volume control set for maximum volume, the sound will be barely audible.
Adjust A9 for MINIMUM noise and clearest sound.
With the same weak signal, adjust A10 and A11 for MINIMUM noise and clearest sound.
Reduce the signal input even further until noise is present retouch A9 for MINIMUM noise and clearest sound.

VHF OSCILLATOR ALIGNMENT

Leave bias connect as under Video IF Alignment. Leave local-distant switch in local position and contrast full counter clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Set the fine tuning control to the mid-position of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Fig. 3	Across antenna terminals thru network (Fig. 3).	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓐ. Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

RF, MIXER AND UHF ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

FIG. 1

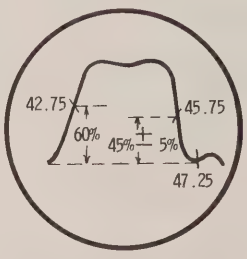


FIG. 2

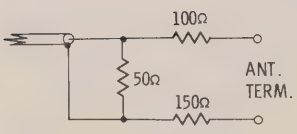


FIG. 3

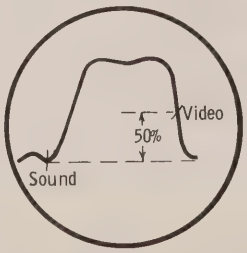
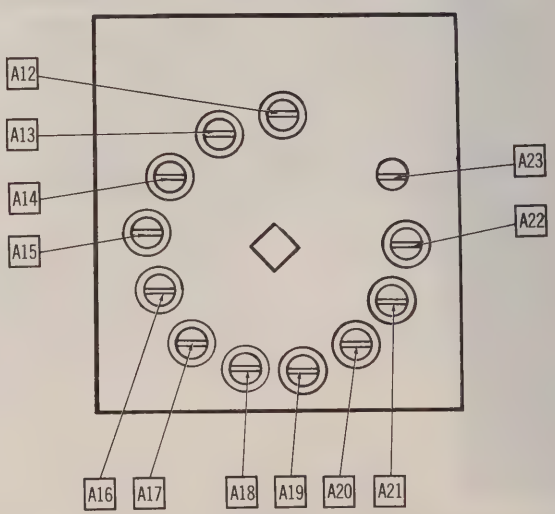
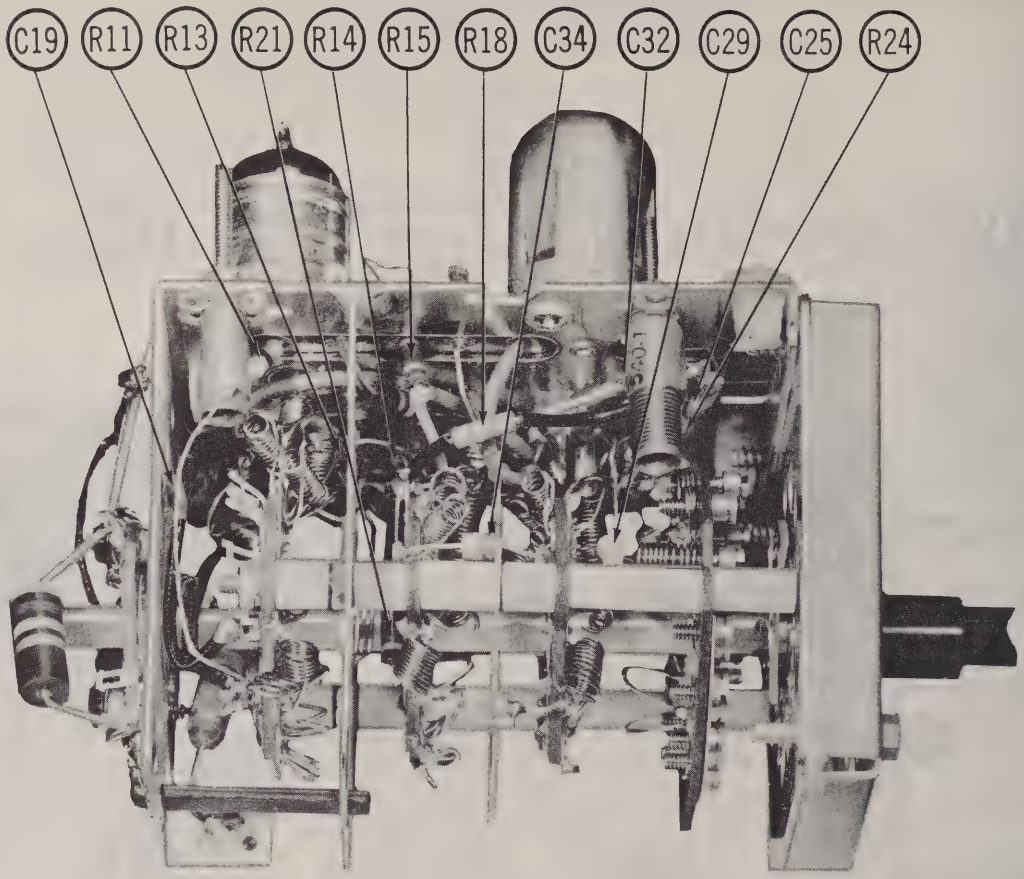


FIG. 4

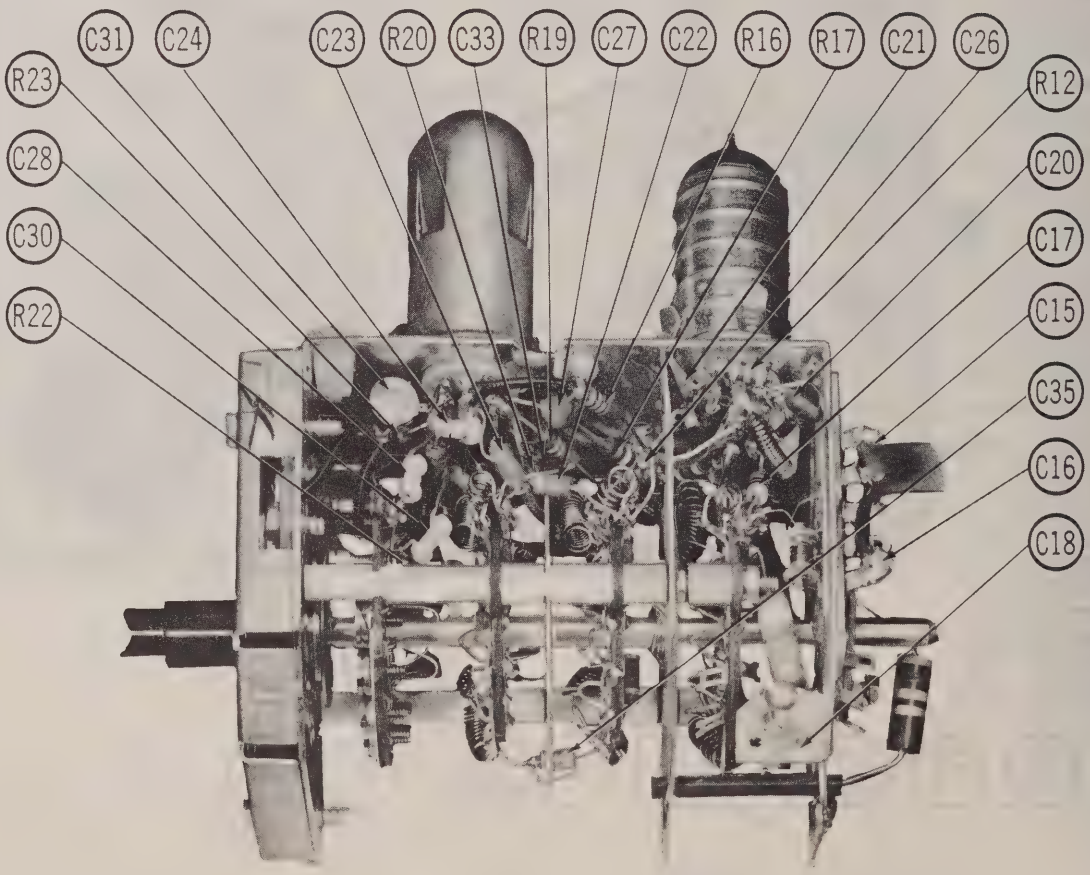


CHASSIS-TOP VIEW

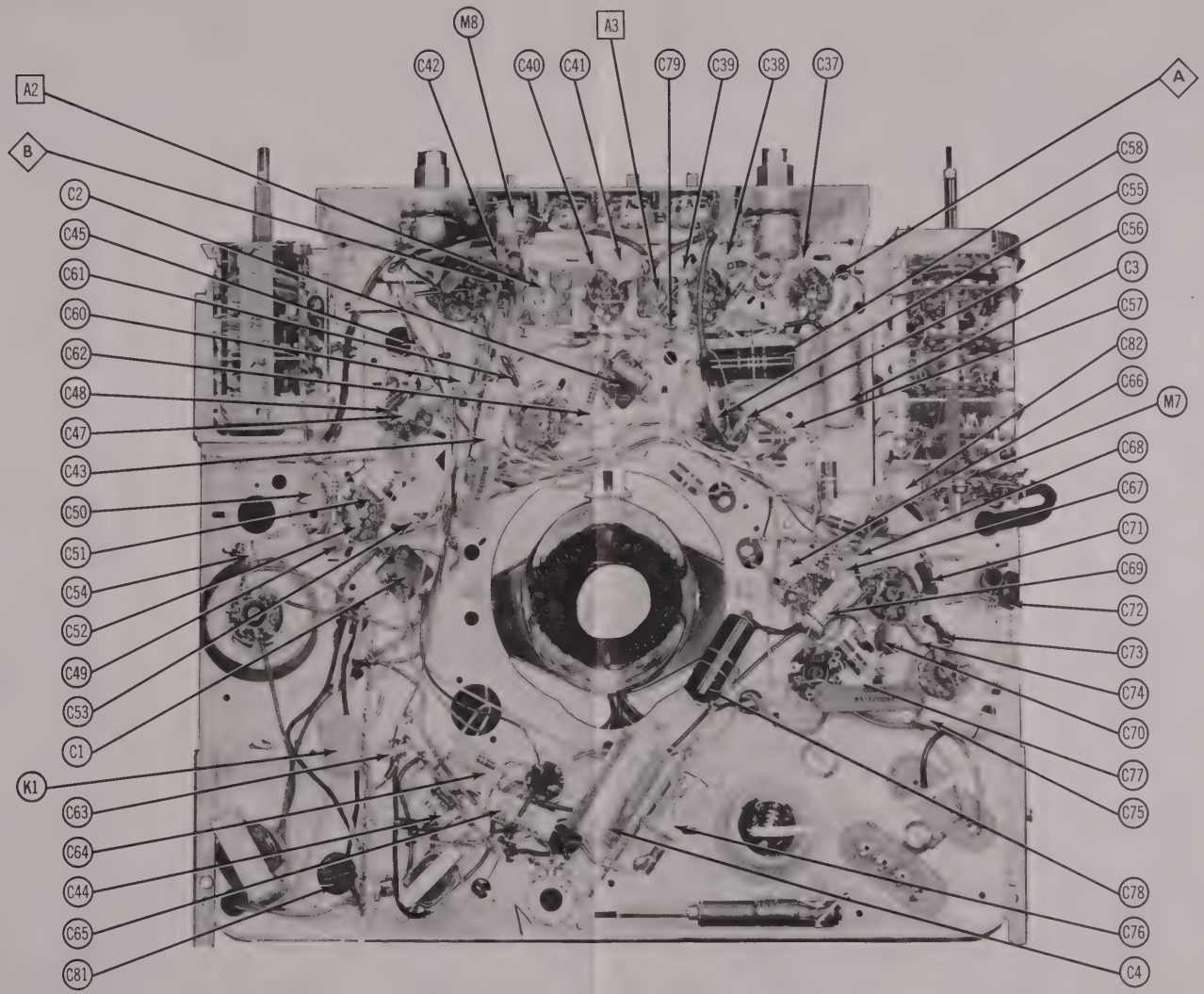
SPARTAN CHASSIS U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)



VHF TUNER-LEFT SIDE



VHF TUNER-RIGHT SIDE



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

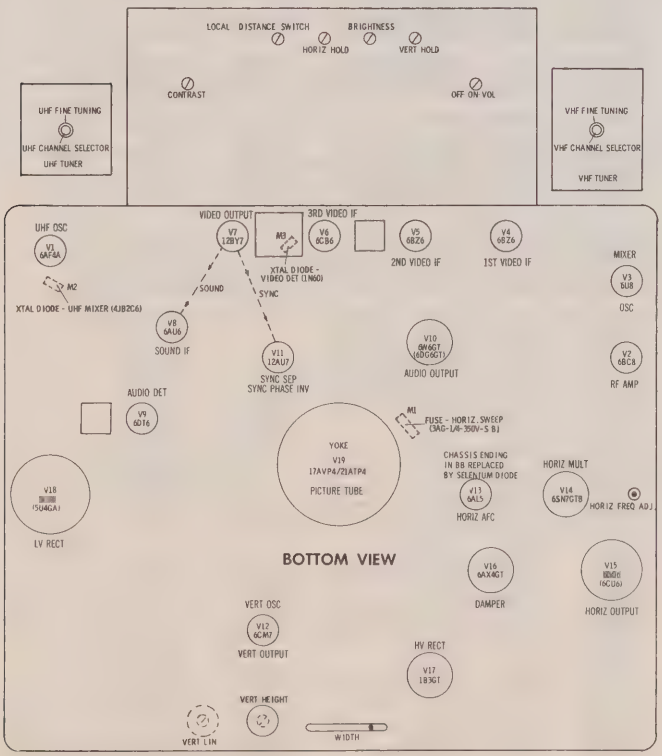
SPARTAN CHASSIS U18-01AA, BB, U18-02AA, BB, U18-03AA, BB, U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)

FOLDER 3

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4A	■ °900Ω	22K	0Ω	.1Ω	0Ω	22K	■ °900Ω		
V2	6BC8	† 1900Ω	220K	INF	0Ω	.1Ω	INF	1.1Meg	0Ω	0Ω
V3	6U8	■ 500Ω	360K	■ 100K	0Ω	.1Ω	† 5200Ω	0Ω	0Ω	10K
V4	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V5	6BZ6	1Meg	56Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V6	6CB6	.1Ω	220Ω	.1Ω	0Ω	■ 1000Ω	■ 1000Ω	0Ω		
V7	12BY7	● 100Ω	470K	0Ω	.1Ω	.1Ω	0Ω	† 4300Ω	■ 8200Ω	0Ω
V8	6AU6	1.4Ω	0Ω	.1Ω	0Ω	■ 12K	■ 12K	220Ω		
V9	6DT6	3.5Ω	680Ω	.1Ω	0Ω	† 270K	■ 6800Ω	560K		
V10	6W6GT	TP	0Ω	† 480Ω	† 3600Ω	550K	NC .	.1Ω	70K	
V11	12AU7	† 1Meg	4.7Meg	0Ω	0Ω	0Ω	† 4000Ω	22K	3300Ω	.1Ω
V12	6CM7	°3200Ω	NC	0Ω	0Ω	.1Ω	ǂ 1.8Meg	● 1.7Meg	● 1.9Meg	● 2500Ω
V13	6AL5	18Ω	18Ω	.1Ω	0Ω	5Meg	0Ω	5Meg		
V14	6SN7GTB	4.7Meg	† 7500Ω	1300Ω	120K	† 150K	1300Ω	0Ω	.1Ω	
V15	6DQ6	NC	0Ω	NC	† 12K	470K	TP	.1Ω	0Ω	TOP CAP ǂ 26Ω
V16	6AX4GT	NC	NC	7Meg	NC	† 37Ω	NC	0Ω	.1Ω	
V17	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ǂ 511Ω
V18	5U4G	NC	20K	NC	21Ω	NC	23Ω	NC	20K	
V19	PIX TUBE	0Ω	11K	PIN 6 1600Ω	PIN 10 1600Ω	PIN 11 ● † 310K	PIN 12 .1Ω			

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
° MEASURED IN UHF POSITION
† MEASURED FROM PIN 8 OF V18.
ǂ MEASURED FROM PIN 3 OF V16.
■ MEASURED FROM 140V SOURCE.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART

SET 401 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	UHF Oscillator	6AF4A	
V2	RF Amplifier	6BC8	
V3	Mixer-Oscillator	6U8	
V4	1st. Video IF Amplifier	6BZ6	
V5	2nd Video IF Amplifier	6BZ6	
V6	3rd Video IF Amplifier	6CB6	
V7	Video Output	12BY7	
V8	Sound IF Amplifier	6AU8	
V9	Audio Detector	6DT6	

ITEM No.	USE	TYPE	NOTES
V10	Audio Output	6W6GT	Note 1
V11	Sync Sep.-Sync Phase Inv.	12AU7	
V12	Vert. Osc.-Vert. Output	6CM7	
V13	Horiz. AFC	6AL5	Note 2
V14	Horiz. Mult.	6BN7GTB	
V15	Horiz. Output	6DQ6	Note 4
V16	Damper	6AX4GT	
V17	HV Rectifier	1B3GT	
V18	LV Rectifier	5U4G	Note 3

Note 1. 6DQ6GT used in chassis ending in BB.
Note 2. Used only in chassis ending in AA.
Note 3. 5U4GA may be used in some versions.
Note 4. 6CU6 may be used in some versions.

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	SPARTAN PART No	CBS PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No.	
V19	21ATP4 ①	21ATP4 ①	21ATP4 / 21ATP4 ① 17AVP4	21ATP4/ 21ATP4A ② 17AVP4	① Aluminized ② Silver screen "95"
	17AVP4	17AVP4A ①	17AVP4 ①	17AVP4A ②	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT	SPARTAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No	SANGAMO PART No.	SPRAGUE PART No.
C1A	ø40	350	270021-62	REI008	BO480	FP284.5	TMT-97	T-110	R2351 *
B	ø50	50			BR505	TC39	TD-30-350	MT-0550	
C	ø70	350							
C2A	ø30	350	270021-55	AFH3-114-70		FP247		T-502	R2346 *
B	ø6	350				TC60		MT-4530	
C	ø100	200							
C3	20	350	270027-20	PRS450V20	BR2035	TC65	TD-20-350	FM-4520	TVA-1608
C4	10	350	270027-26 (Note 1)	NP-PRS350-VNP10	BR2035 } † BR3035 }	TC65 } †		MT-4520 } MT-4520 }	R2327 *

Note 1. Non-polarized unit.
† Connect negative leads together.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SPARTAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	1.2			NP0-SI 1	TCZ-1	C10V15C	TCO-1	Z7-5515	5TCCB-V1	
C6			350188-10							
C7	.62									
C8	10			NP0-SI 10	TCZ-10	C10Q3C	ED-10	UC-5411	5GA-Q1	
C9	2.3-4.0		250220-2							
C10	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C11	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C12	1		250221-114	NP0-SI 1	TCZ-1	C10V15C	TCO-1	Z7-5515	5TCCB-V1	
C13			250188-10							
C14	47			N750-SI 47	TCN-47	C10Q47U	TC7-47	NT-5447	5TCU-Q47	
C15	39		250175-20	N750-SI 39	TCN-39	C10Q39U	TC7-39			
C16	39		250175-20	N750-SI 39	TCN-39	C10Q39U	TC7-39			
C17	10		250221-127	NP0-SI 10	TCZ-10	C10Q3C	ED-10	UC-5411	5GA-Q1	
C18			250188-6							
C19	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C20	1500		250175-10	BPD-0015	DD-152	BYA10D15	ED-1500	UC-5215	5GA-D15	
C21	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470		5GA-T47	
C22	.18		250216-4							
C23	15		250207-5	NP0-SI 15	TCZ-15	C10Q5C	ED-15	UC-5415	5GA-Q15	
C24	6									Note 2
C25	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	Note 3
C26	100		250175-34	BPD-0001	DD-101	C10T1C	ED-100	UC-531	5GA-T1	
C27	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C28	10		250088-136	NP0-SI 10	TCZ-10	C10Q3C	ED-10	UC-541	5GA-Q1	
C29	91									
C30	6		250088-143							
C31	470		250216-15	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C32	470		250175-8	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C33	1500		250175-10	BPD-0015	DD-152	BYA10D15	ED-1500	UC-5215	5GA-D15	
C34	2.2		250221-115	NP0-SI 1.2	TCZ-1	C10V15C	TCO-1	Z7-5515	5TCCB-V1	Note 4
C35	.36		250216-5							Note 5
C36	68			NP0-SI 68	TCZ-68	C10Q68C	TCO-68		5TCC-Q68	
C37	800		250218-14	BPD-008	DD-801	L10T8	ED-820		5GA-T8	
C38	680		250216-4	DI-680	DT-681	L10T68	ED-680		5GA-T68	
C39	470		250218-15	DI-470	DD-471	L10T47	ED-470		5GA-T47	
C40	800		250218-14		DD-801	L10T8	ED-820		5GA-T8	
C41	10000		250175-3	BPD-01	DD-103	BYA10S1M	GP-10000	DC5II	5HK-S1	
C42	.1	200	250185-18	P388N-1		DF-104	CUB2P1		GEM-201	2TM-P1
C43	1	200	250203-13	P388N-1		DF-104	CUB2P1		GEM-201	2TM-P1
C44	.047	400	250212-7	DP-05		DF-503	CUB4S47		GEM-4147	4TM-S47
C45	2.2		250221-118	NP0-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2			5TCCB-V22
C46	68		250215-7	N750-SI68	TCN-68	C10Q68U	TC7-68			5TCU-Q68
C47	3900		250175-32	BPD-004	DE-402	BYA10D4	GP-4000	UC-5240		5GA-D39
C48	5000		250175-1	BPD-005	DD-502	BYA10D5	GP-5000	DC525		5HK-D5
C49	470		250218-6	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347		5GA-T47
C50	10000		250175-3	BPD-01	DD-103	BYA10S1M	GP-10000	DC5II		5HK-S1
C51	.15		250221-303							
C52	10000		250218-19	BPD-01	DD-103	BYA10S1M	GP-10000	DC5I		5HK-S1
C53	10000		250218-19	BPD-01	DD-103	BYA10S1M	GP-10000	DC5II		5HK-S1
C54	.047	200	250202-11	BPD-05	DF-503	CUB2S47			GEM-2147	2TM-S47
C55	10000		250175-2	BPD-01	DD-103	BYA10S1M	GP-10000	DC5II		5HK-S1
C56	100		250218-23	N750-SI 100	TCN-100	C10T1U	TC7-100	NT-531		5TCU-T1
C57	.0047	600	250201-5	BPD-0047	DD-472	CUB6D47	GP-4700		GEM-6247	6TM-D47
C58	.22	200	250202-15	P288N-22		CUB2P22			GEM-2022	2TM-P22
C59	.1	200		P388N-1		DF-104	CUB2P1		GEM-201	2TM-P1
C60	.0022	400	250211-3	BPD-0022		D6-222	CUB4D22	GP-2200	GEM-4222	4TM-D22
C61	150		250229-534	BPD-00015		DD-151	L10T15	ED-150	UC-5315	5GA-T15
C62	.1	400	250211-13	P488N-1		DF-104	CUB4P1		GEM-401	4TM-P1
C63	5000		250175-1	BPD-005		DD-502	BYA10D5	GP-5000	DC525	5HK-D5
C64	.027	400	250212-9	BPD-03		DF-303	CUB4S27		GEM-4127	4TM-S27
C65	.1	400	250211-13	P488N-1		DF-104	CUB4P1		GEM-401	4TM-P1
C66	1000		250218-8							
C67	1000		250218-8							

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Spartan PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No	SPRAGUE PART No.	
C68	.0047	400	250212-4	BPD-05	DD-472	CUB4D47	GP-4700	GEM-4247	4TM-D47	
C69	.047	200	250212-5	BPD-05	DF-503	CUB2S47		GEM-2147	2TM-S47	
C70	1000		250216-8	BPD-001	DD-102	BYA10S1	ED-1000	DC5II	5HK-D1	
C71	360		250229-343	1464-00036		1R5T36			M8-336	
C72	3900		250229-468	1464-0039		3R5D39			M8-339	
C73	470		250229-346	1464-00047		1R5T47			M8-347	
C74	1000		250218-8			L10D1	ED-1000	DC5II	5HK-D1	
C75	.047	400	250211-11	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C76	.047	400	250211-11	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C77	47	4000	250175-33							
C78	.1	600	250201-13		DF-104	CUB6P1		GEM-601	6TM-P1	
C79	680		250216-4	BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C80	470		250218-6		D6-471	L10T47			5GA-T47	
C81A	10000 } B 10000 }		250219-3	BPD-EX01	DDM2-103	BYD6D81	GP-10000 GP-10000	DC5II } DC5II }	5HK-2S1	
C82	.1	400	250211-13	P488N-1	DF-104	CUB4P1			4TM-P1	Note 7

Note 2. Some versions may use a 6. 8MMF in this application (Part #220221-125).
Note 3. Some versions may use a 27MMF in this application.
Note 4. Not used in some versions.
Note 5. Some versions may use a .56MMF in this application.
Note 6. Not used in chassis ending in BB.
Note 7. A 20000MMF used in chassis ending in BB.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SPARTAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	220136-46	AB-70	A47-1Meg-Z	Q3-137	U53	Volume - Note 1
B	Shaft			AK-3	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	U8-36	
R2A	1000Ω	½	220136-50					Contrast - Note 3
B	Shaft							
R3A	1. 25Meg	½	220133-3	BX-742	A47-1. 5Meg -3	Q1-138	TA155L	Vert. Hold
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R4A	200K	½	220132-2	BX-46	A47-200K-S	Q1-129	U-43	Brightness
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R5A	50K	½	220132-1	BX-31	A47-50K-S	Q1-123	TA54L	Horiz. Hold
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R6A	2.5Meg	½	220146-2	AB-83	A47-2. 5Meg -3	Q1-139	TA155L	Vert. Height
B	Shaft			AK-1	FKS-1/4	Not Req.	Not Req.	
R7	3000Ω	1	220130-3				FL-4K	Vert. Lin. -wire wound

Note 1. An alternate 250K control part #220135-2 used in chassis ending in BB.
Note 2. An alternate 600Ω control part #220126-56 used in chassis ending in BB.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA Spartan PART No.	NOTES
	OHMS	WATT		
R8	100K		230104-86	
R9	22K		230104-78	
R10	820Ω	1	230145-61	
R11	100K		230104-86	
R12	470K		230104-94	
R13	470K		230104-94	
R14	680Ω		230104-60	
R15	680Ω		230104-60	
R16	33K		230104-80	
R17	330K		230104-91	
R18	3300Ω		230104-68	Note 1
R19	820K		230104-87	
R20	100K		230104-86	
R21	8200Ω		230104-73	
R22	5600Ω		230104-71	
R23	10K		230104-74	
R24	150Ω		230104-52	
R25	4700Ω	1	230105-70	Note 2
R26	15K	2	230105-76	
R27	100Ω		230104-50	
R28	15K	2	230105-76	
R29	12000Ω	1	230145-63	Note 3
R30	1Meg		230104-98	
R31	4700Ω 5%		230094-175	
R32	1Meg		230104-98	
R33	6800Ω 5%		230094-179	
R34	1000Ω		230104-62	
R35	56Ω		230104-47	
R36	1000Ω		230104-62	
R37	12K 5%		230094-185	
R38	1000Ω		230104-62	
R39	56Ω		230104-47	
R40	8200Ω 5%		230094-181	
R41	100K		230104-86	
R42	220Ω		230104-54	
R43	470Ω			
R44	470K		230104-94	
R45	4300Ω	5	240073-1	
R46	270K		230104-81	
R47	2200Ω	1	230105-73	
R48	8200Ω	1	230105-73	
R49	12K		230104-75	
R50	220Ω		230104-54	
R51	560K		230104-95	

ITEM No.	RATING		REPLACEMENT DATA Spartan PART No.	NOTES
	OHMS	WATT		
R52	6800Ω		230104-72	
R53	680Ω		230104-60	
R54	270K		230104-91	Note 4
R55	1. 2Meg 5%		230094-233	
R56	1Meg 5%		230094-231	
R57	1Meg		230104-98	
R58	3300Ω	1	230105-68	
R59	270Ω	3	230105-55	
R60	10K		230104-74	
R61	470K		230104-94	
R62	4. 7Meg		230104-100	
R63	1Meg		230104-98	
R64	1Meg		230104-98	
R65	22K		230104-78	
R66	33000Ω 5%		230094-171	
R67	22K		230104-78	Note 5
R68	3300Ω 5%		230094-171	
R69	1. 2Meg		230104-98	Note 6
R70	22K		230104-78	
R71			230130-2	Note 7
R72	1Meg	1	230105-98	
R73	11K 5%		230094-184	
R74	1000Ω		230104-62	
R75	300Ω 5%		230094-146	
R76	300Ω 5%		230094-146	
R77	100K		230104-86	
R78	100K		230104-86	
R79	470K		230104-94	
R80	4. 7Meg		230104-106	
R81	68000 5%		230094-179	
R82	1300Ω 5%		230094-162	
R83	100K 5%		230094-207	
R84	120K 5%		230094-209	Note 8
R85	12K		230104-75	
R86	470K		230104-94	Note 9
R87	12K 5%	5	240071-14	
R88	18Ω	3	230106-41	
R89	6800Ω		230104-72	Note 10
R90	3. 9Ω	1	230107-3	
R91	1500Ω	1	230105-64	
R92	680Ω		230104-60	
R93	120K		230110-1	

Note 1. A 10K may be used in some versions.
Note 2. Not used in some versions.
Note 3. A 22001, 2W used in BB chassis (Part #230106-86).
Note 4. Not used in BB chassis.
Note 5. A 100K used in BB chassis (part #230104-86).
Note 6. A 1. 6Meg used in BB chassis (part #230104-10).
Note 7. Negative temperature coefficient resistor. Approximately 800K cold.
Note 8. A 150K used in some versions (Part #230094-211).
Note 9. A 8500Ω, 5W used in BB chassis (Part #270071-35).
Note 10. A 2700Ω used in BB chassis (Part #230104-67).

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA Spartan PART No	Halldorson PART No.	Merit PART No	Stancor PART No.	Thordorson PART No	Triad PART No
	PRI.	SEC. 1	SEC. 2	SEC. 3						
T1	117VAC	575VCT	5V	6. 3V	300077-1 ①	P-9733 ③	P-3077 ③	P-8335 ④	26R33 ③	R-52BC
	② 1. 65A	② 250A	② 3A	② 2. 5A	300093-1 ②			⑤	③ ⑦	③ ⑧

① Used in Chassis ending in AA.
② Used in Chassis ending in BB.
③ Fabricate mounting.
④ Use original mounting bracket.
⑤ Parallel and phase 6. 3V filament windings.
⑥ Parallel and phase 6. 3V ② 5A windings.
⑦ Tape low high voltage winding. Tape 5V ② 3A winding.
⑧ Tape 6. 3V ② 1. 8A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA Spartan PART No	Halldorson PART No	Merit PART No		Stancor PART No.	Thordorson PART No	Triad PART No
T3	Vert. Osc. Trans.	330262-1						
T3	Horiz. Output Trans.	330523-1 ①				A-8295 *	FLY-70 *	
T4	Vert. Output Trans.	330263-1	Z1807 ②	A-2824 ②		V315 ②	A-6141 ③	28954 ③	A-109X ③
T5A	Yoke(90°) Horiz. (21MH)	330617-1 330619-1 ⑤	DF607 ④	MDF-92 ④		Y90P19/42 ④	DY-16A ④	Y-16 ④	Y-42-1 ④
B	Vert. (45MH)								
T6	Width Coil	330652-1 ⑦	RF800 ⑥	MWC-10 ⑥		20LR3A ⑥	WC-10 ⑥ ⑪	WC-24 ⑫ ⑬	WC-11 ⑭ ⑫

① Chassis ending in BB use Magnavox part #380700-1.
② Cut and tape blanking lead.
③ Drill new mounting hole(s).
④ Connect as auto transformer.
⑤ Yoke rear cover.
⑥ Use original yoke damping network.
⑦ Chassis ending with BB use Magnavox part #380699-1.
⑧ Use terminals #1 and #2.
⑨ Use black and white terminals.
⑩ Use terminals C and E.
⑪ Use plain terminals.
⑫ Use original mounting bracket.
⑬ Use coil (L1).
⑭ Use red and blue terminals.
*This part may be superceded by Parts Manufacturer's introduction of special unit for this application

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL	Halldorson Replacement Connections	Merit Replacement Connections		Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
	8					8	8	
	5					5	5	
	3					3	3	
	4				4	4	2	
	2				2	2	4	
	1				1	1	1	
Connect Width Coil Across	1 & 2				1 & 3	1 & 2		
Special Notes							⑮	

⑮ If insufficient width, add capacity (approx. 50-100MMF ② 4KV) across horizontal yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA Spartan PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
	PRI.	SEC.							
T7	2000Ω	3-4Ω	320251-1 ① 320251-2 ②	Z1101	A-2928 ③	A-3332	24S50 ③	S-2X ③	

① Used in chassis ending in AA.
② Used in chassis ending in BB.
③ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	Spartan PART No.	NOTES
L1	RF Choke	360574-30	
L2	RF Choke	360574-30	
L7	Fil. Choke	360574-8	
L4	Fil. Choke	360574-8	

ITEM No.	USE	Spartan PART No.	NOTES
L5	Cath. Choke	360622-7	
L6	RF Choke	360574-8	
L7	UHF IF Output	360574-50	
L8	UHF IF Output	360574-12	

ITEM No.	USE	REPLACEMENT DATA Spartan PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L9	1st. Video IF	360540-1		TV-131	6225	
L10	2nd. Video IF	360636-1	17-6523	TV-130	6219	
L11	3rd. Video IF	360637-1	17-5003	TV-128	6233	Includes 47. 25MC trap
L12	Shunt Peaking Coil	360622-10	19-3560		6146	47 Microhenrys, IRC part #CLA
L13	Series Peaking Coil	360622-15	19-3350 *	TV-185 *	6141 *	225 Microhenries, wound on 39K resistor
L14	Shunt Peaking Coil	360622-16	19-3300	TV-185	6130	275 Microhenries
L15	1st. Sound IF	360657-1				
L16	2nd. Sound IF	360650-1				
L17	Quadrature Coil	360651-1				
L18	Fil. Choke	360601-3			4602	4 Microhenries, IRC part #CLA
L19	RF Choke	360574-8	19-1000		4003	1.1 Microhenries
L20	Fil. Choke	360601-1				47 Microhenry, IRC part #CLA
L21	RF Choke	360601-1				.47 Microhenry, IRC part #CLA

* Parallel with 39K resistor.

SPARTAN CHASSIS U18-01AE, BB, U18-02AA, BB, U18-03AA, BB; U18-04AA, BB, V18-01AA, BB, V18-02AA, BB, V18-03AA, BB, V18-04AA, BB (18 Series)

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SPARTAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.		Ram PART No.	Thordarson PART No.	
L22	60Ω		360579-1						HS-7	22-78 Millihenries

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	SPARTAN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.250A	37Ω	.45 HY.	320058-3 ①	C5040 ②	C-2974 ②	C-2326②	26C44②	C-23X ②

① Alternate part #320058-2.
② Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SPARTAN PART No.	REPLACEMENT DATA
K1	Vertical Integrator	2000MMF 8200Ω 5000MMF 8200Ω 5000MMF 22K	250186-1	Aerovox PA110 Centralab PC100 Cornell-Dubilier 115TM1 Sprague V-1

FUSES

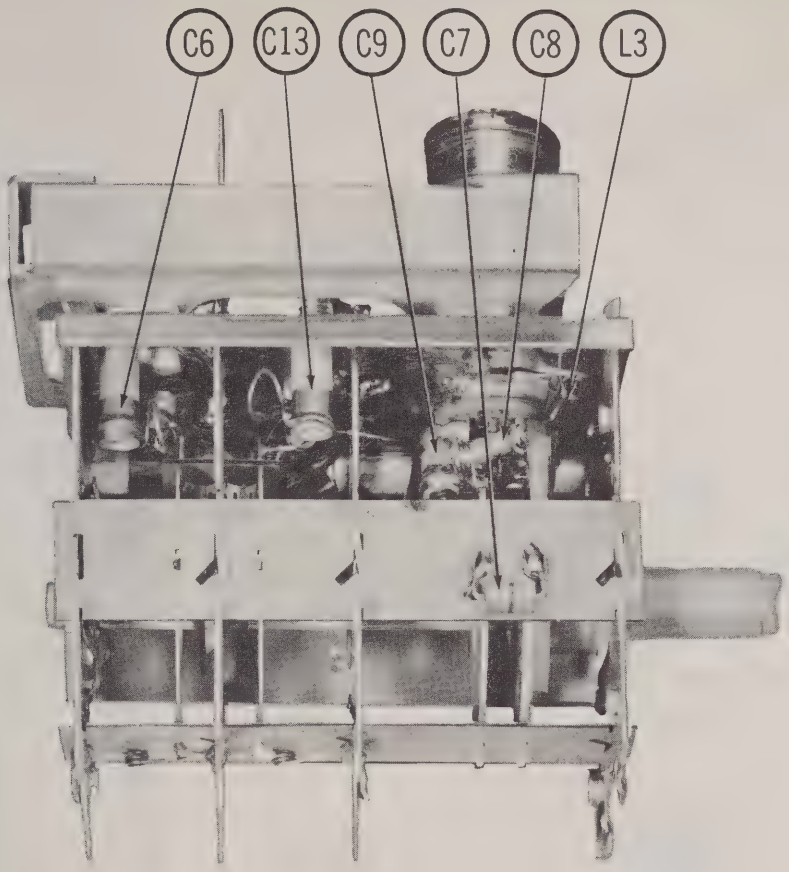
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SPARTAN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A 250V S/B	180157-30		313.250 (3AG 1/4A S/B)	357001	MDL 1/4	4405

CRYSTAL DIODES

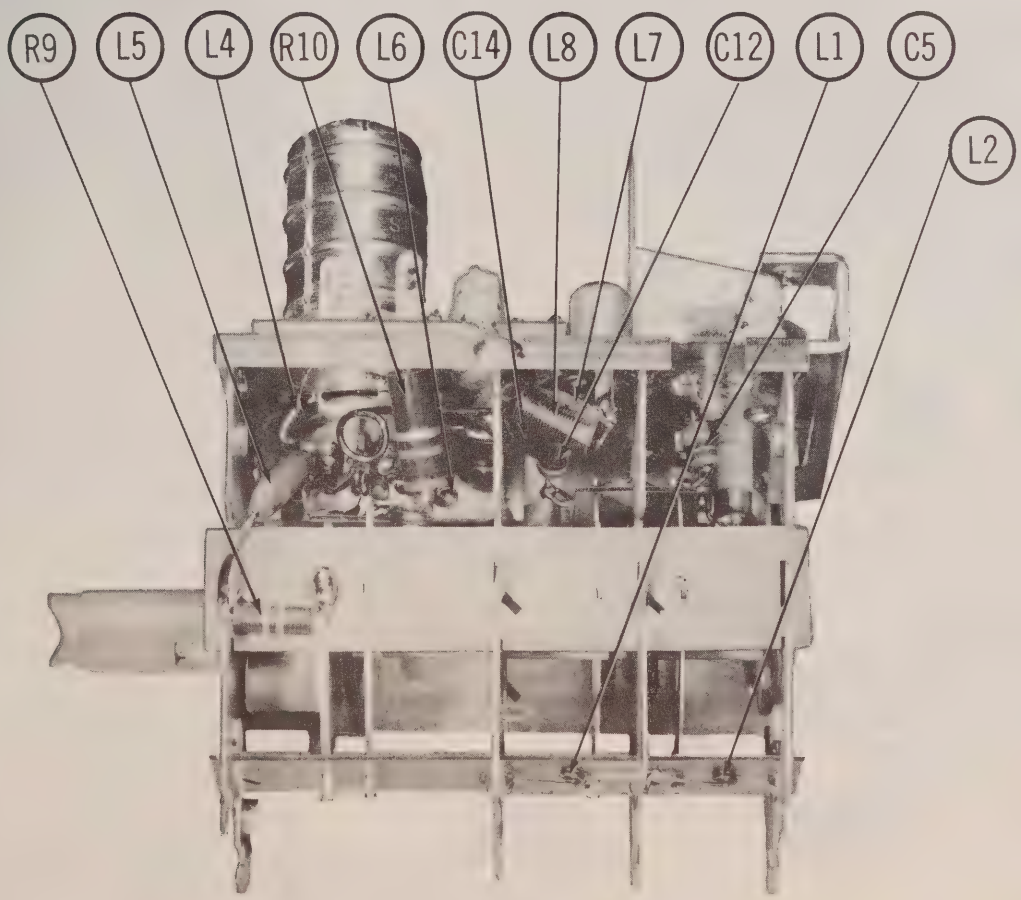
ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SPARTAN PART No.	SYLVANIA PART No.	
M2	1N82A	530036-1	1N82A	UHF Mixer (Clip in)
M3	1N64		1N60	Video Detector (Pigtail)

MISCELLANEOUS

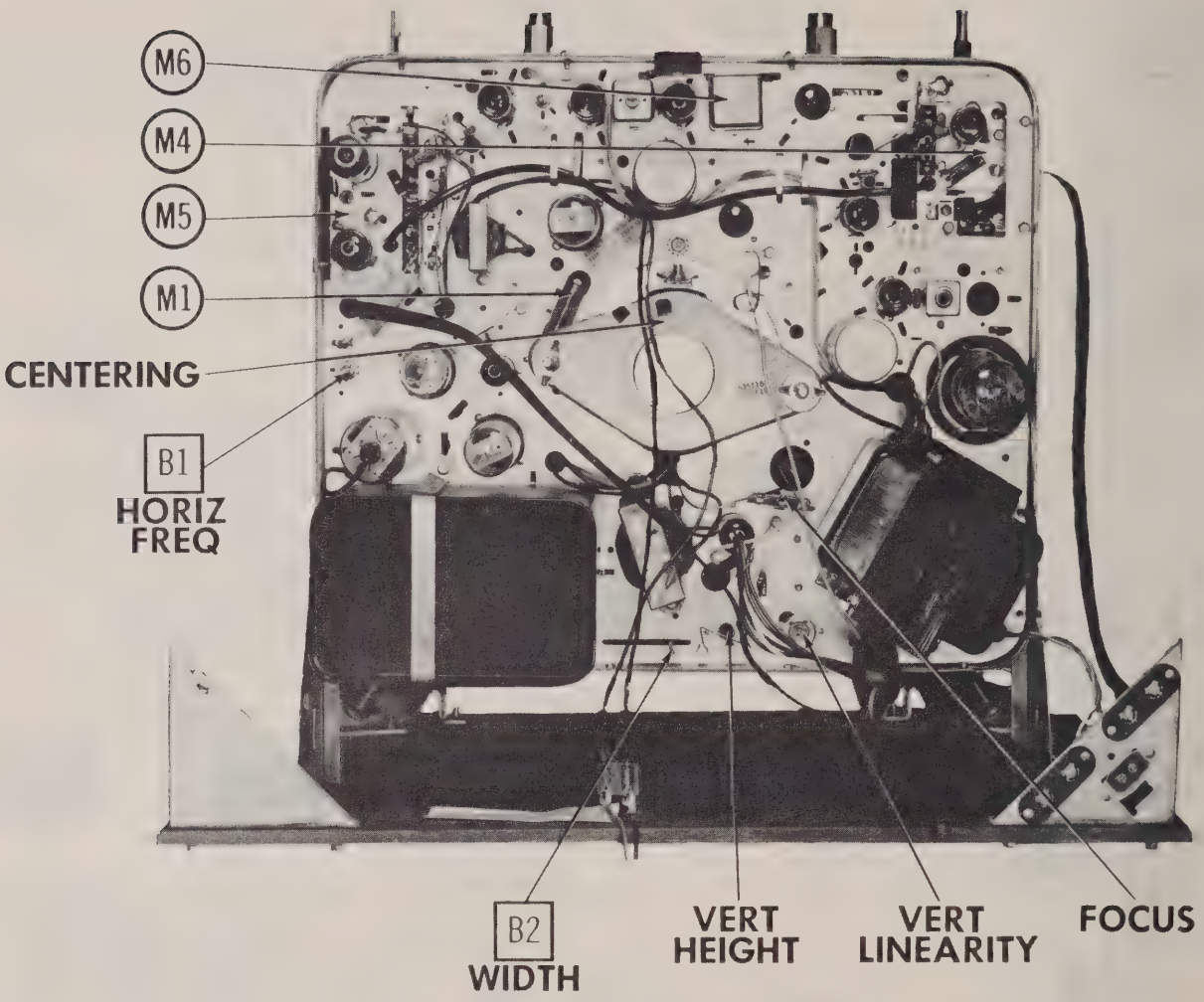
ITEM No.	PART NAME	SPARTAN PART No.	NOTES
M4	Tuner	700530-2	UHF
M5	Tuner	700541-2	VHF
M6	Video Det. Assy.	360638-1	Includes trans., coil, 470Ω resistor, 10MMF Cap., and diode M3.
M7	Switch	160247-1	UHF/VHF change-over
M8	Switch	160263-2	Local-distant (DPDT)
M9	Centering Device		
M10	Ion Trap	360492-5	



UHF TUNER-LEFT SIDE



UHF TUNER-RIGHT SIDE



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the horizontal hold control at the center of its range. Turn the horizontal frequency slug (B1) slowly clockwise while switching off station and back until the picture just loses sync. Turn B1 slowly counter clockwise until the picture just falls back in sync and then continue to turn counter clockwise $\frac{1}{2}$ turn.

The picture should hold sync at both extreme ends of the horizontal hold control. If necessary, readjust B1 SLIGHTLY and test for sync pull-in as above.

Adjust the width slug (B2) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

BELL SOUND
MODEL 3DT (G)

BELL SOUND
MODEL 3DT (G)

BELL SOUND
MODEL 3DT (G)

TRADE NAME	Bell Sound Model 3DT (G)	
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Road, Columbus 7, Ohio.	
TYPE SET	AC Operated 8 Channel Binaural Amplifier	
TUBES	Eleven	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.1 Amp @ 117 Volts AC (120 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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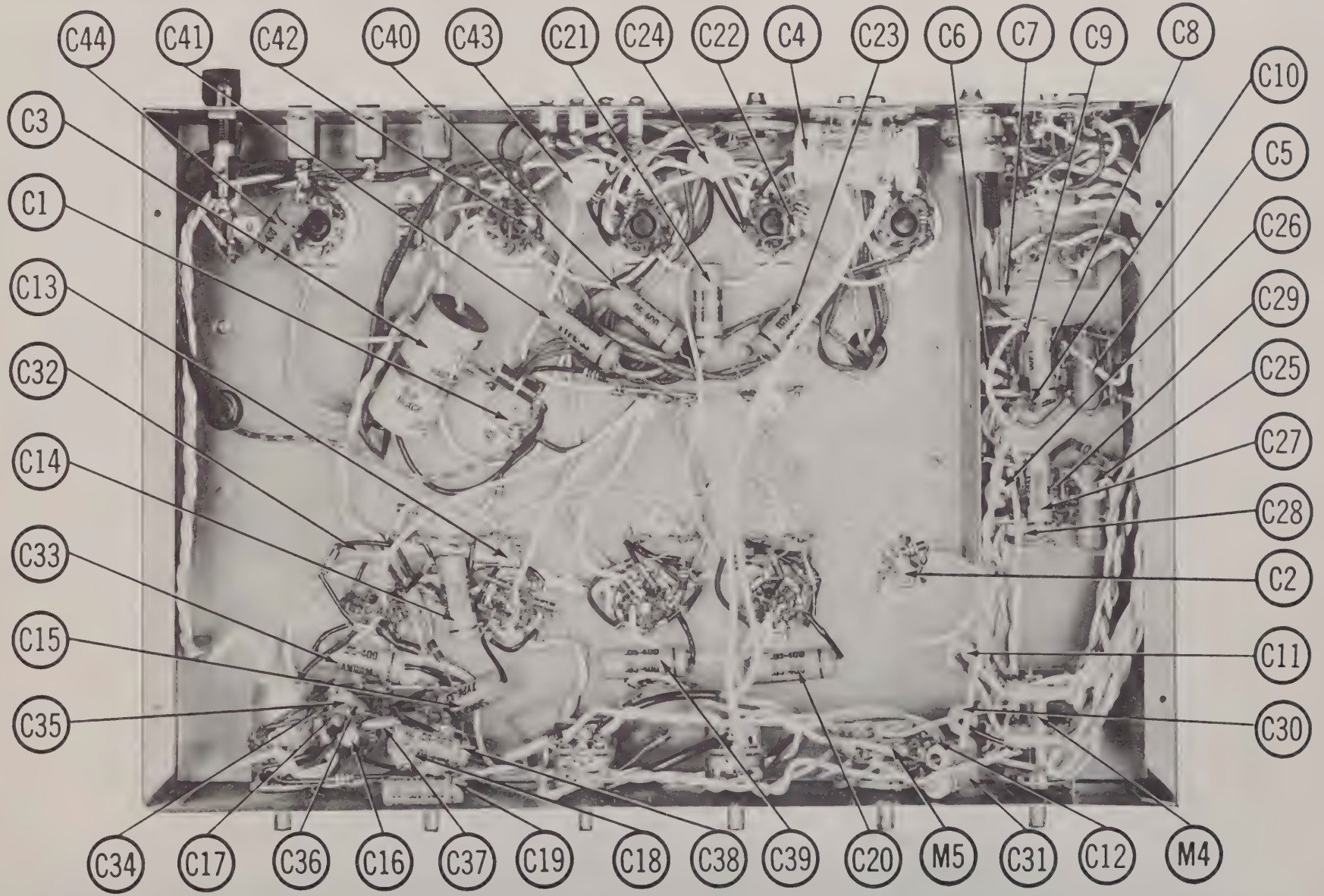
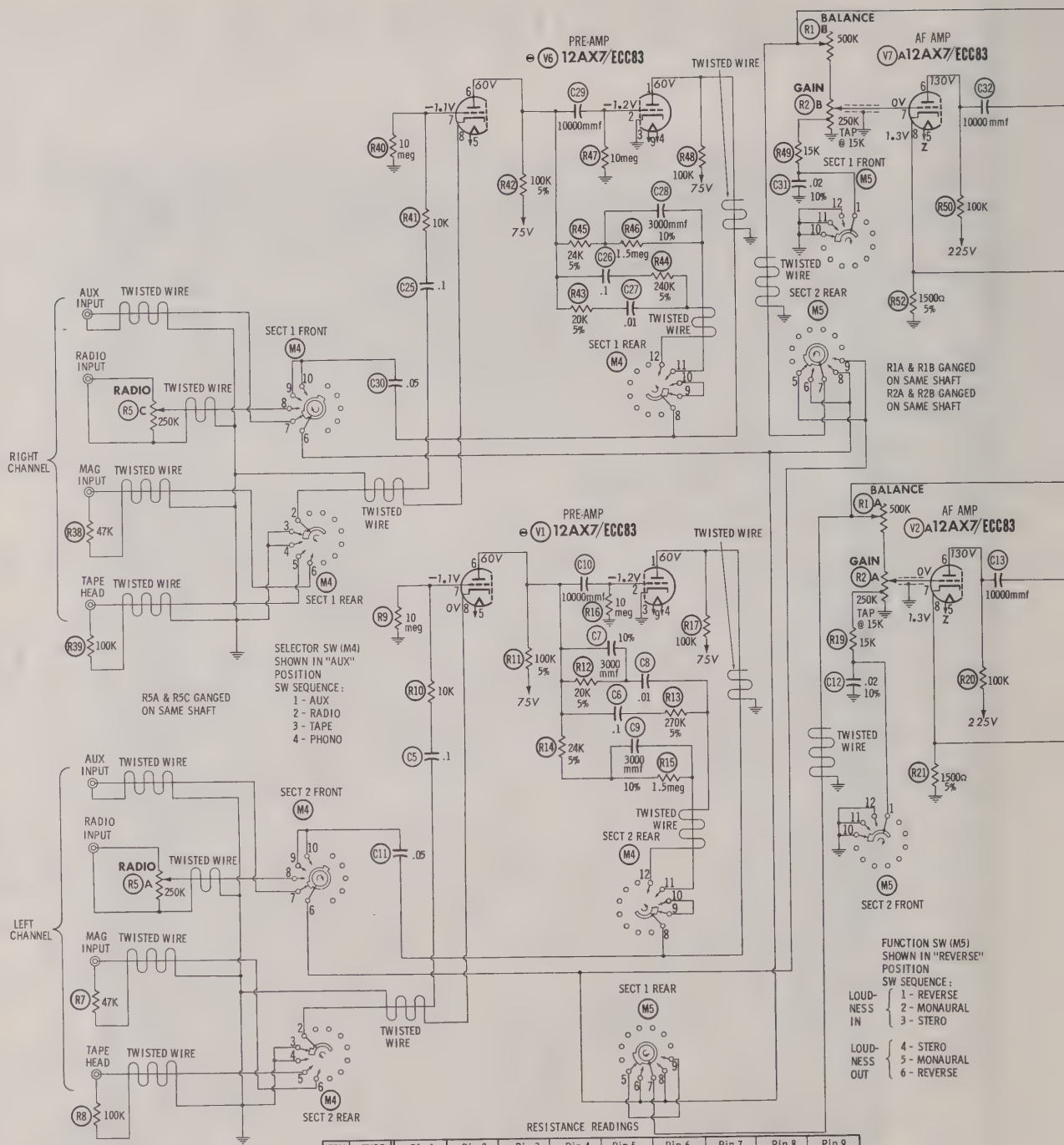


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

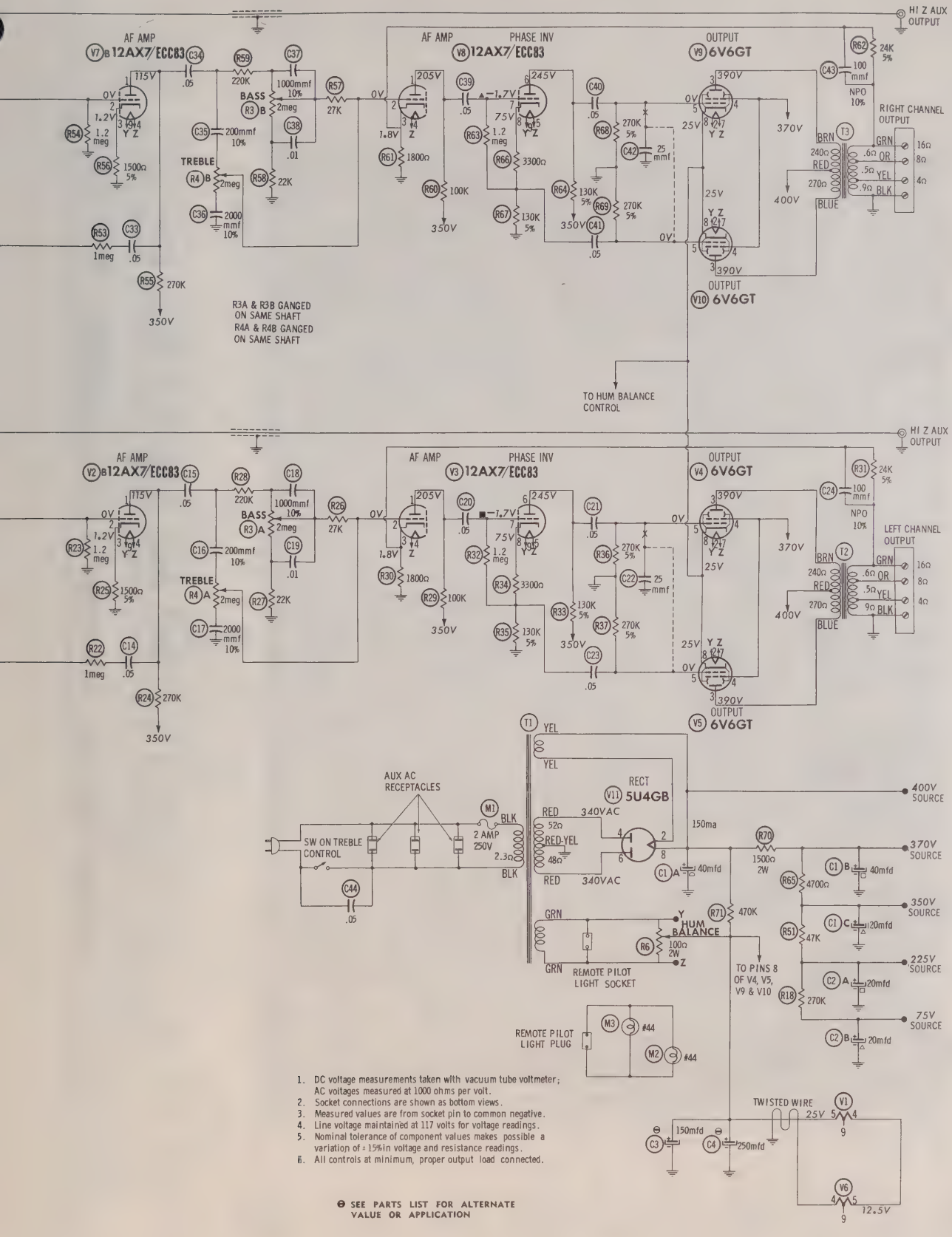
BELL SOUND
MODEL 3DT (G)



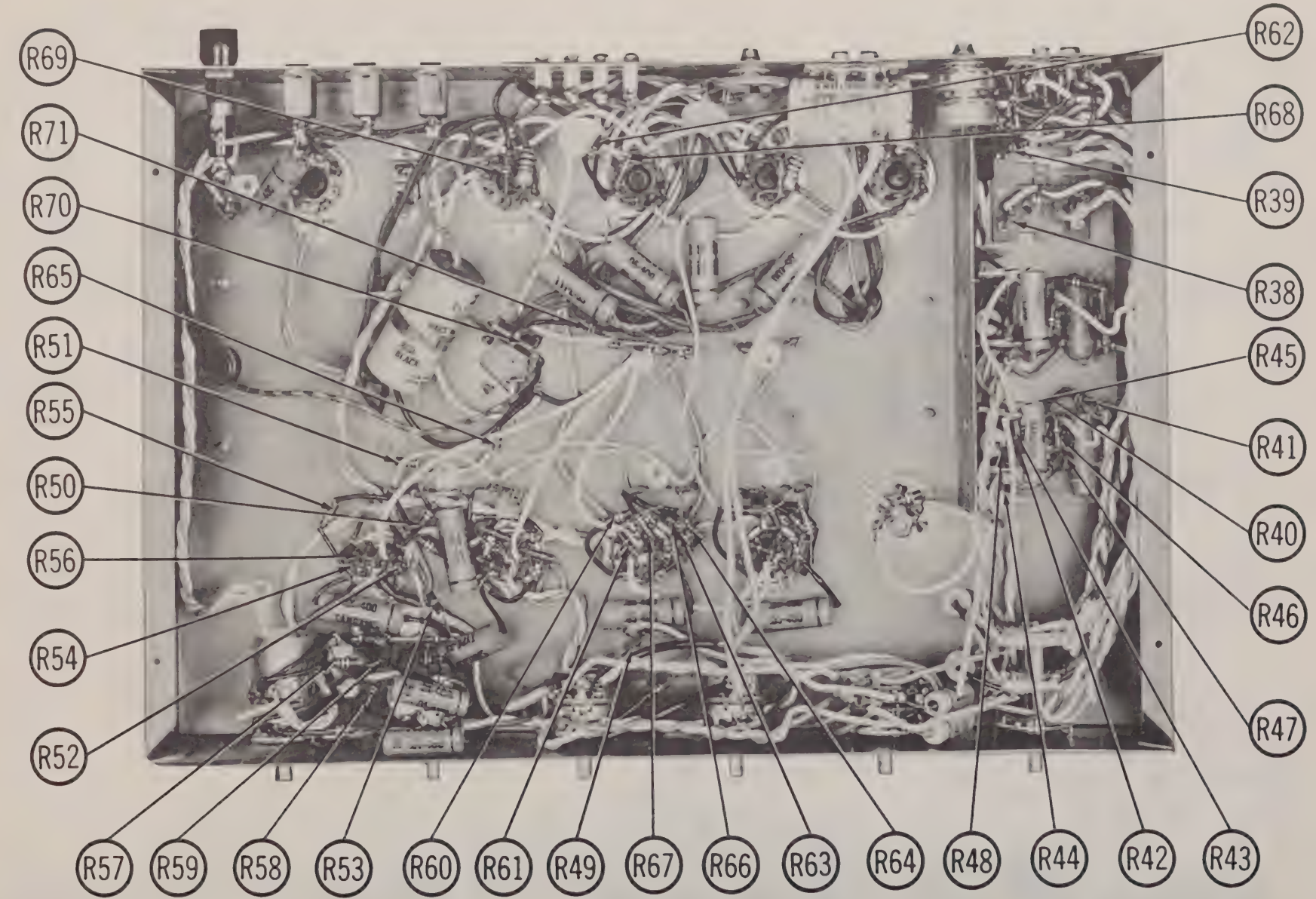
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	†420K	10meg	0Ω	15Ω	30Ω	†420K	10meg	0Ω	NC
V2	12AX7 ECC83	†270K	1.2meg	1500Ω	50Ω	50Ω	†150K	0Ω	1500Ω	50Ω
V3	12AX7 ECC83	†100K	8500Ω	1800Ω	50Ω	50Ω	†130K	1.3meg	130K	50Ω
V4	6V6GT	0Ω	50Ω	†240Ω	†1500Ω	270K	TP	50Ω	30Ω	
V5	6V6GT	0Ω	50Ω	†270Ω	†1500Ω	270K	NC	50Ω	30Ω	
V6	12AX7 ECC83	†420K	10meg	0Ω	0Ω	15Ω	†420K	10meg	0Ω	NC
V7	12AX7 ECC83	†270K	1.2meg	1500Ω	50Ω	50Ω	†150K	0Ω	1500Ω	50Ω
V8	12AX7 ECC83	†100K	49K	1600Ω	50Ω	50Ω	†130K	1.3meg	130K	50Ω
V9	6V6GT	0Ω	50Ω	†240Ω	†1500Ω	270K	TP	50Ω	30Ω	
V10	6V6GT	0Ω	50Ω	†270Ω	†1500Ω	270K	NC	50Ω	30Ω	
V11	5U4GB	NC	20K(MIN)	NC	52Ω	NC	48Ω	NC	20K(MIN)	

† MEASURED FROM PIN 8 OF V11
■ MEASURED FROM PIN 8 OF V3
▲ MEASURED FROM PIN 8 OF V8
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958


AF AMP
V7B 12AX7/ECC83
AF AMP
PHASE INV
V8 12AX7/ECC83
OUTPUT
V9 6V6GT
OUTPUT
V10 6V6GT
HI Z AUX OUTPUT
RIGHT CHANNEL OUTPUT
BASS
TREBLE
R3 B
R4 B
R3A & R3B GANGED ON SAME SHAFT
R4A & R4B GANGED ON SAME SHAFT
TO HUM BALANCE CONTROL
AF AMP
PHASE INV
V3 12AX7/ECC83
OUTPUT
V4 6V6GT
OUTPUT
V5 6V6GT
HI Z AUX OUTPUT
LEFT CHANNEL OUTPUT
BASS
TREBLE
R3 A
R4 A
T1
T2
T3
RECT
V11 5U4GB
AUX AC RECEPTACLES
SW ON TREBLE CONTROL
2 AMP 250V
340VAC
150ma
400V SOURCE
370V SOURCE
350V SOURCE
225V SOURCE
75V SOURCE
HUM BALANCE
REMOTE PILOT LIGHT SOCKET
REMOTE PILOT LIGHT PLUG
TO PINS 8 OF V4, V5, V9 & V10
TWISTED WIRE
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

401-4



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Left Channel Preamp.	12AX7/ECC83 ①
V2	AF Amplifier	12AX7/ECC83
V3	AF Amp. -Phase Inv.	12AX7/ECC83
V4	Output	6V6GT
V5	Output	6V6GT

ITEM No.	USE	TYPE
V6	Right Channel Preamp.	12AX7/ECC83 ①
V7	AF Amplifier	12AX7/ECC83
V8	AF Amp. -Phase Inv.	12AX7/ECC83
V9	Output	6V6GT
V10	Output	6V6GT
V11	Rectifier	5U4GB

①Some versions may use 12AY7 in this application

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Bell Sound PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	●40	450		AFH3-43-50	C0344	FP376.9	TMT-39	T-165 MT-4510	TVL-3786
B	■40	450							
C	▲20	450							
C2A	■20	450		AFH2-51	B0400	FP234	TMD-50	D-215	TVL-2755
B	▲20	450							
C3	150	50	①	PRS50V150	BR1505	TC495	TD-150-50	MT-15150	TVA-1311
C4	250	50	①	PRS50V250	BR2505	TC50025	TD-250-50	S-057	TVA-1312

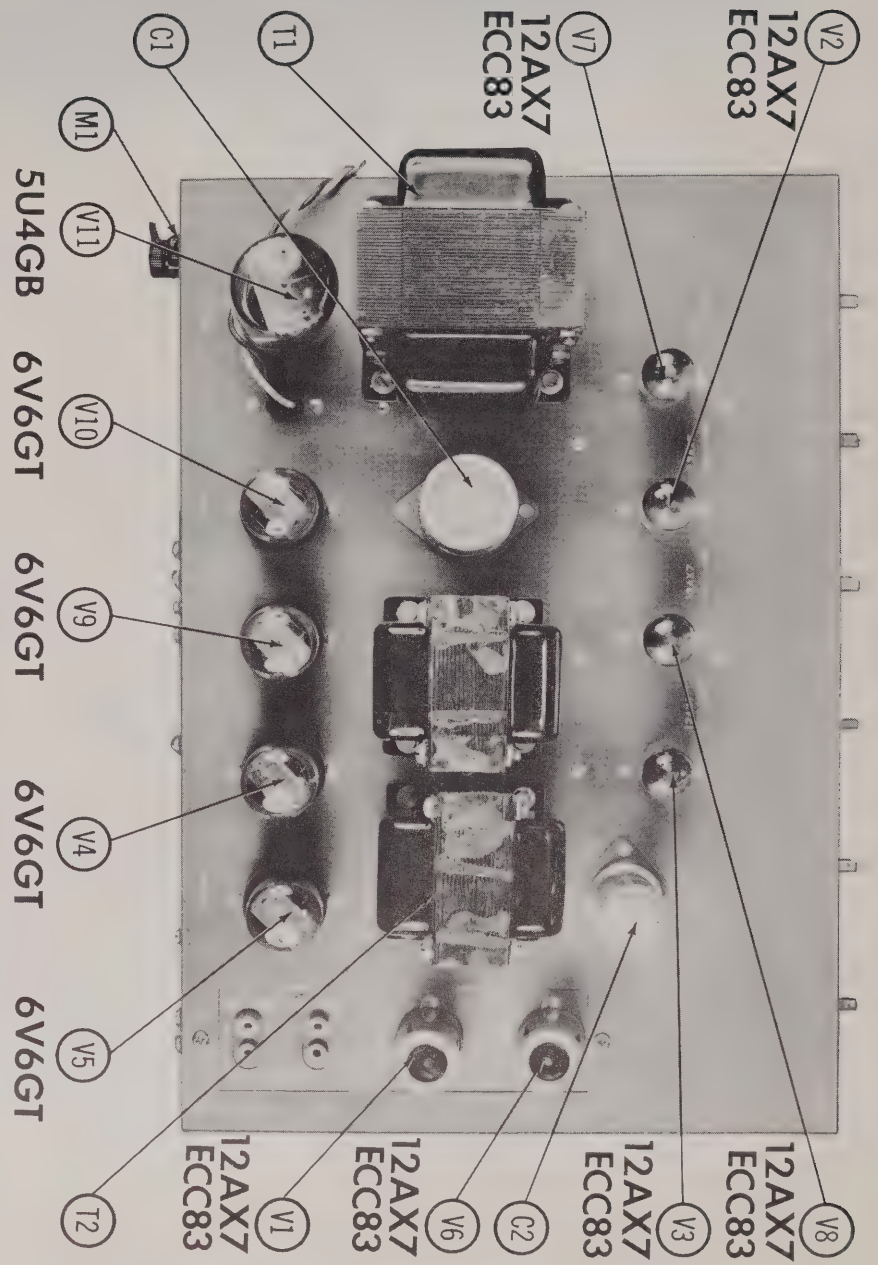
① When C3 is 500mfd, C4 is not used

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Bell Sound PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	3000					1R5D3	MCB461	MS-23	10%
C8	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C9	3000					1R5D3	MCB461	MS-23	10%
C10	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C11	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C12	.02	400					GEM-1612		10%
C13	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C14	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C15	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C16	200				TCZ-200	L10T2	MCB237	MS-32	10%
C17	2000					1R5D2	MCB457	MS-22	10%
C18	1000					1R5D1	MCB255	MS-21	10%
C19	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C20	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C21	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C22	25			SI25	D6-250	LT6Q25	UC-5425	5GA-Q25	
C23	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C24	100			NP0-DI100	TCZ-100	C10T1C	ZT-531	5TCC-T1	NP0 10%
C25	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C26	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C27	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C28	3000					1R5D3	MCB461	MS-23	10%
C29	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C30	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C31	.02	400					GEM-1612		10%
C32	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C33	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C34	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C35	200				D6-201	L10T2	MCB237	MS-32	10%
C36	2000					1R5D2	MCB457	MS-22	10%
C37	1000					1R5D1	MCB255	MS-21	10%
C38	.01	400		P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C39	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C40	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C41	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C42	25			SI25	D6-250	LT6Q25	UC-5425	5GA-Q25	
C43	100			NP0-DI100	TCZ-100	C10T1C	ZT-531	5TCC-T1	NP0 10%
C44	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

CHASSIS—TOP VIEW



BELL SOUND
MODEL 3DT (G)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Bell Sound PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	20066P121	B-1041		Q13-133	UE1295	Balance
B	500K	½				M13-133		Balance
R2A	250K	½	20066P122				UE1299	Gain, Tap ⓐ 15K
B	250K	½						Gain, Tap ⓐ 15K
R3A	2meg	½	20066P120			Q13-139	UE1874	Bass
B	2meg	½				M13-139		Bass
R4A	2meg	½	20066P119			Q13-139	UE1873S	Treble
B	2meg	½				M13-139		Treble
C	Switch	½				76-1		
R5A	250K	½	B20066P123	BB-103	AD47-250K-Z	Q13-130		Radio input adjust.
B	250K	½		Not Req.	Not Req.	M13-130		Radio input adjust.
C	Shaft			Not Req.	FKS-1/4	RQ		
R6A	100Ω	2(WW)	B-20066P141	WN101	A43-100	WPK100	R100L	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Bell Sound PART No.	NOTES
R7	47K			
R8	100K			
R9	10meg			
R10	10K			
R11	100K 5%			
R12	20K 5%			
R13	270K 5%			
R14	24K 5%			
R15	1.5meg			
R16	10meg			
R17	100K			
R18	270K			
R19	15K			
R20	100K			
R21	1500Ω 5%			
R22	1meg			
R23	1.2meg			
R24	270K			
R25	1500Ω 5%			
R26	27K			
R27	22K			
R28	220K			
R29	100K			
R30	1800Ω			
R31	24K 5%			
R32	1.2meg			
R33	130K 5%			
R34	3300Ω			
R35	130K 5%			
R36	270K 5%			
R37	270K 5%			
R38	47K			
R39	100K			

ITEM No.	RATING OHMS	RATING WATT	Bell Sound PART No.	NOTES
R40	10meg			
R41	10K			
R42	100K 5%			
R43	20K 5%			
R44	240K 5%			
R45	24K 5%			
R46	1.5meg			
R47	10meg			
R48	100K			
R49	15K			
R50	100K			
R51	47K			
R52	1500Ω 5%			
R53	1meg			
R54	1.2meg			
R55	270K			
R56	1500Ω 5%			
R57	27K			
R58	22K			
R59	220K			
R60	100K			
R61	1800Ω			
R62	24K 5%			
R63	1.2meg			
R64	130K 5%			
R65	4700Ω			
R66	3300Ω			
R67	130K 5%			
R68	270K 5%			
R69	270K 5%			
R70	1500Ω	2		
R71	470K			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Bell Sound PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ 1.1A	680VCT ⓐ .150A	5V ⓐ 3A	B-20373		P-3173		PC8422	22R33	R-16A
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 3.5A									

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Bell Sound PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω CT	16Ω Tap ⓐ 8Ω & 4Ω	B-20374				A-3304	22S68 ①		① Tape 250Ω & 500Ω taps
T3	6500Ω CT	16Ω Tap ⓐ 8Ω & 4Ω	B20374				A-3304	22S68 ①		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Bell Sound PART No. FUSE	Bell Sound PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 250V			312002. (3AG 2A 250V)	342001	AGC2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Bell Sound PART No.	NOTES
M2	Pilot Lamp		#44
M3	Pilot Lamp		#44
M4	Switch		Selector (input) (Rotary wafer type)
M5	Switch		Function (Rotary wafer type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

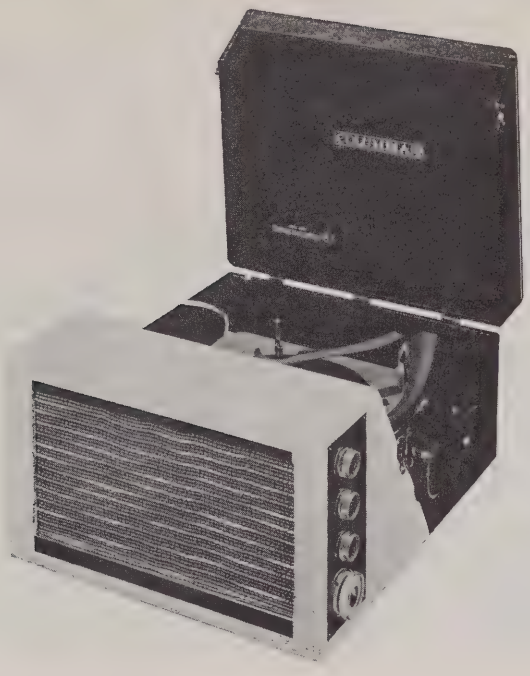
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

COLUMBIA RECORDS
MODELS 517R, 518R

COLUMBIA RECORDS
MODELS 517R, 518R



TRADE NAME	Columbia Records Models 517-R, 518-R
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.
TYPE SET	AC Operated Portable AM Receiver With 4 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AX7 AF Amp.-Phase Inv., (2) 35C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .25 Amp. @ 117 Volts AC (27 Watts Less Motor)
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to antenna lug of tuning gang. Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.		Loop	1500KC	1500KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 1200A - PHOTOFACT SET 353 - FOLDER 16.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H442

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	AF Amp. -Phase Inv.	12AX7	
V4	Output	35C5	
V5	Output	35C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	11B713	PRS150V80	BBRT84215	TCT3116	TDLT-7	FMT-339	TVA-3455
B	40	150		4020		TC45			
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	220			DI -00022	DD-221	L10T22	UC-5322	5GA-T22	
C3	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C4	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C5	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C6	100			BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C7	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C8	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C9	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C10	20000			BPD-02	DD-203	BYB6S2		5HK-S2	Note 1
C11	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C12	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C13	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C14	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

Note 1. Some versions may use 10000mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	1/2	9B563	B-70	A47-1meg-Z	Q13-137	U53	Loudness - Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-12	76-1	US-26	
R2A	500K	1/2	9B562	B-60	A47-500K-Z	Q13-133	U48	Tone - Note 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

* Use KR-1 with red label (CRL) control ; KB-1 with blue label controls.
Note 1. Part #9B561 is used in Model 518-R.
Note 2. Part #9B560 is used in Model 518-R.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

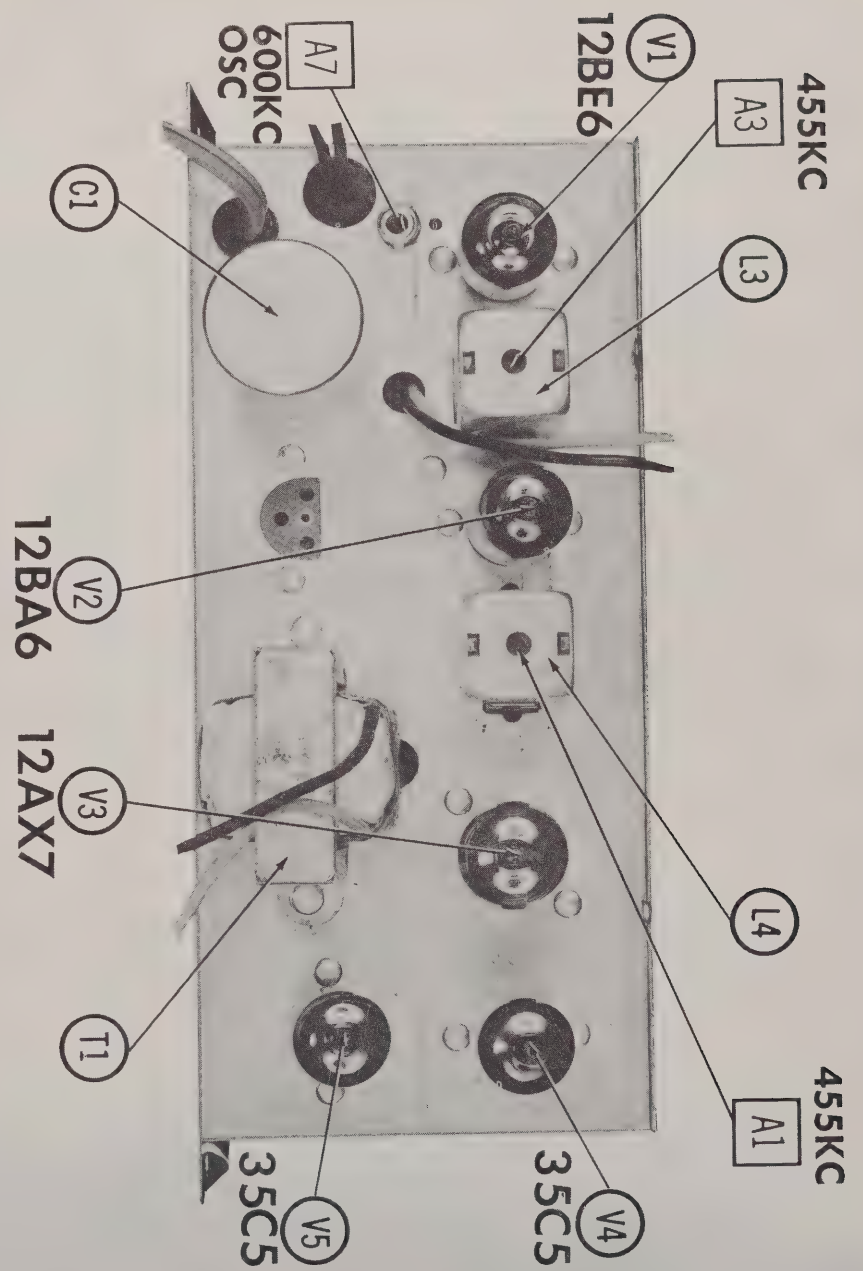
ITEM No.	RATING OHMS	RATING WATT	Columbia Records PART No.	NOTES
R3	1meg			
R4	22K			
R5	150Ω			
R6	470K			
R7	47K			
R8	2.2meg			
R9	3.3meg			
R10	270K 5%			
R11	330Ω			
R12	6.8meg			
R13	270K 5%			
R14	1000Ω	1		
R15	270K 5%			
R16	270K 5%			
R17	270K 5%			
R18	4700Ω			
R19	100Ω	1		
R20	18K			Note 1
R21	100Ω	3	16B412	
R22	47Ω	1		Note 2

Note 1. Some versions may use 15K in this application.
Note 2. Some versions may use 27Ω in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC. 1	REPLACEMENT DATA Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	6400Ω CT	23Ω SEC. 2 3-4Ω	3B217							

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	1B108 ① 1B111 ②	6A21	① Used in Model 517-R. ② Used in Model 518-R.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	19B574					
L2	Osc. Coil	20B310	14-1077	BC-393 *	69-OSC *		
L3	Input IF	20B311	16-6758	BC-352	12-C9	RF-1	
L4	Output IF	20B311	16-6758	BC-353	12-C10	RF-2	

* Disregard capacity winding.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.095A	10B609 ①	1005A ①	RS150 ①	150 ① M150 ②	① Selenium Type. ② Silicon Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Columbia Records PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295	20B312	1N60	1N60	Detector

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Columbia Records PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M3	TO-400-0V	118-TS	NP-1 & NP-3			

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Columbia Records PART No.	JENSEN PART No.	WALCO PART No.	
M4	(78RPM)	†CRA-55 or ♦ CRA-55D	†W64S or ♦W64D	† Jewel ♦ Diamond
	(LP)	†CRA-55LP or ♦ CRA-55LPD	†W64MGS or ♦W64MGD	

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M5	Lamp		110V, 3Watt, Model 518-R only
M6	Tuning Cap.	14B104	2 Gang (Ant. 38-400mmf, Osc. 12-100mmf)
M7	Switch	19B576	Radio-Phono, Model 517-R
	Switch	19B575	Radio-Phono, Model 518-R

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	8B472	Volume, Tone, Radio-Phono Model 517-R
Knob	8B471	4 used, Model 518-R
Knob	8A461	Tuning Model 517-R

WIRING DATA

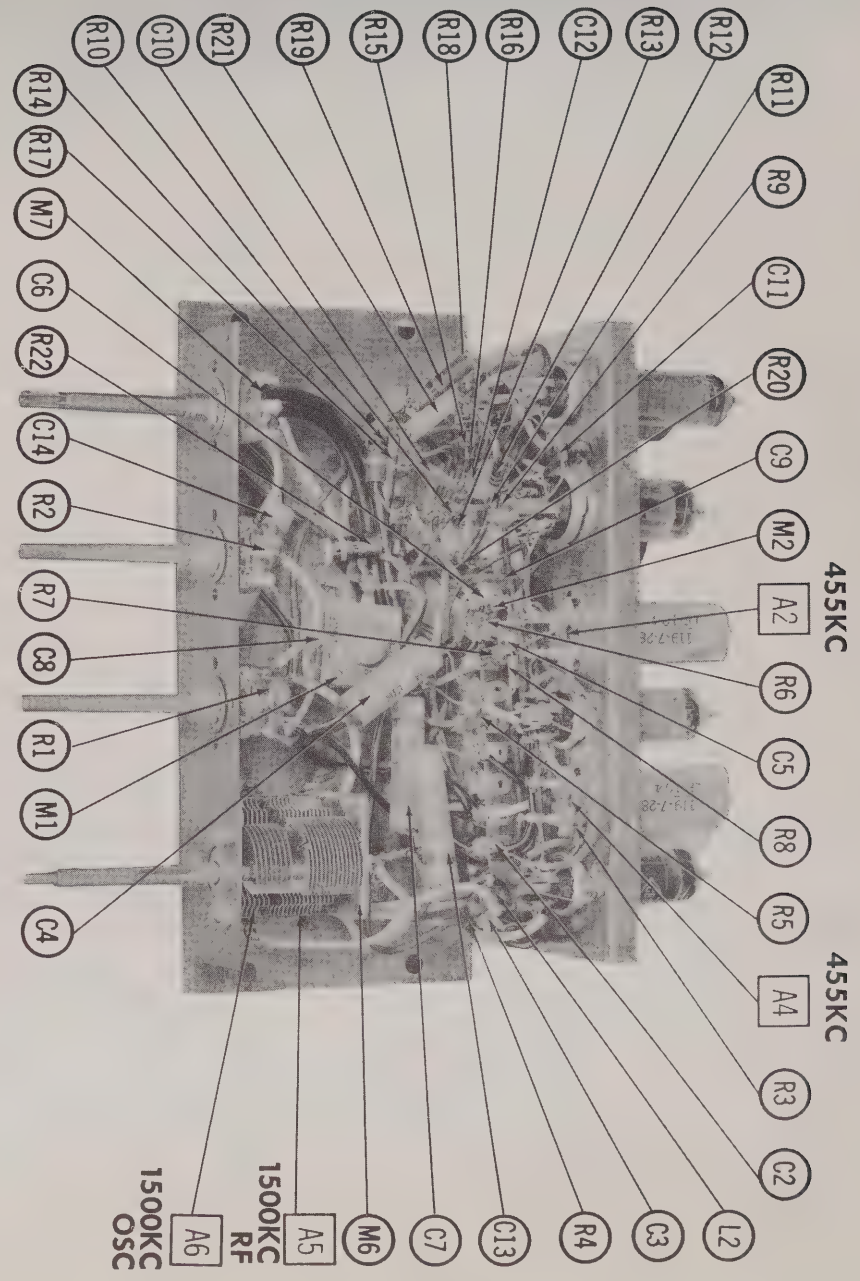
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

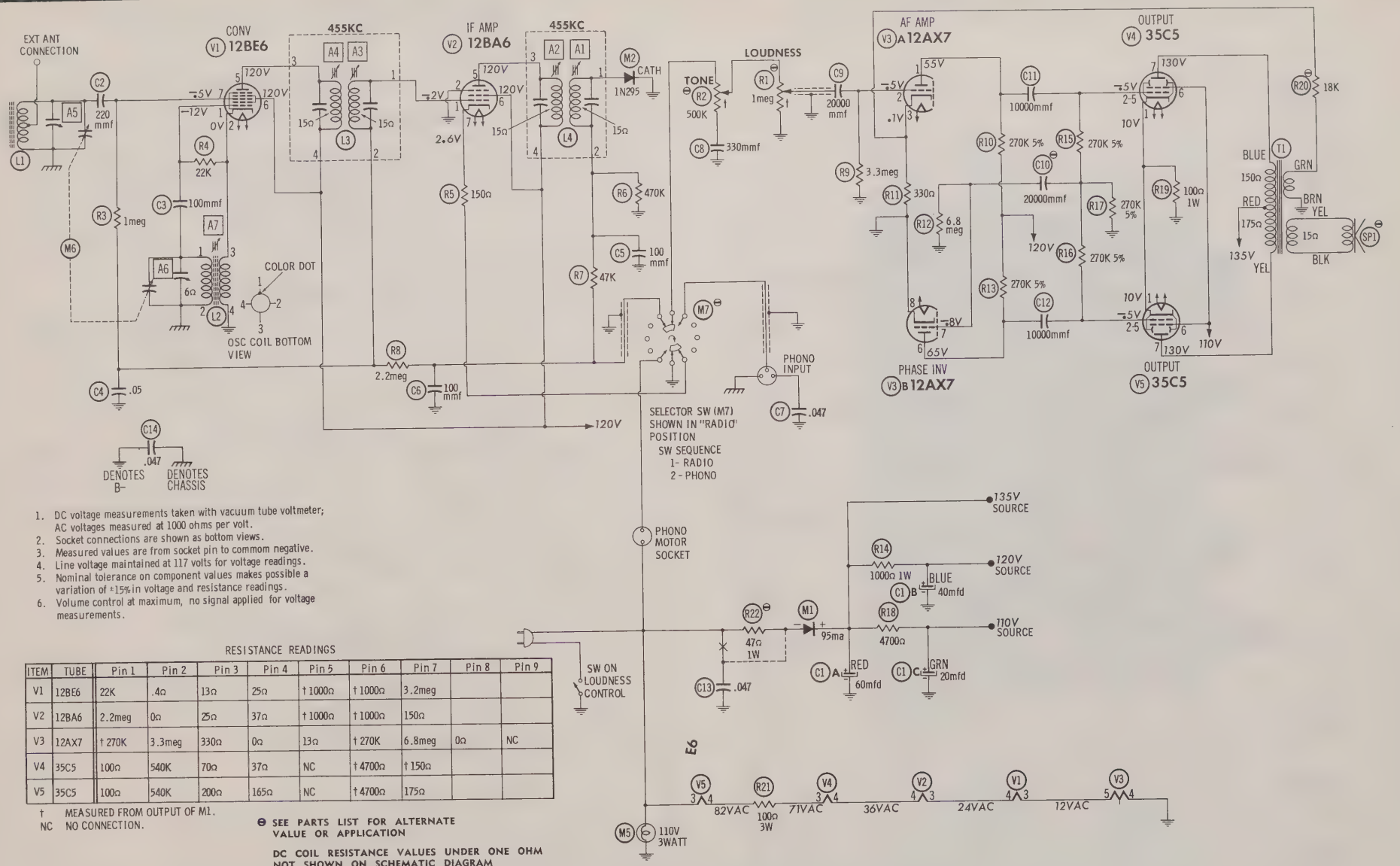
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



SET 401 FOLDER 5

FOLDER 5



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BE6	22K	.4Ω	13Ω	25Ω	†1000Ω	†1000Ω	3.2meg		
V2	12BA6	2.2meg	0Ω	25Ω	37Ω	†1000Ω	†1000Ω	150Ω		
V3	12AX7	†270K	3.3meg	330Ω	0Ω	13Ω	†270K	6.8meg	0Ω	NC
V4	35C5	100Ω	540K	70Ω	37Ω	NC	†4700Ω	†150Ω		
V5	35C5	100Ω	540K	200Ω	165Ω	NC	†4700Ω	175Ω		

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

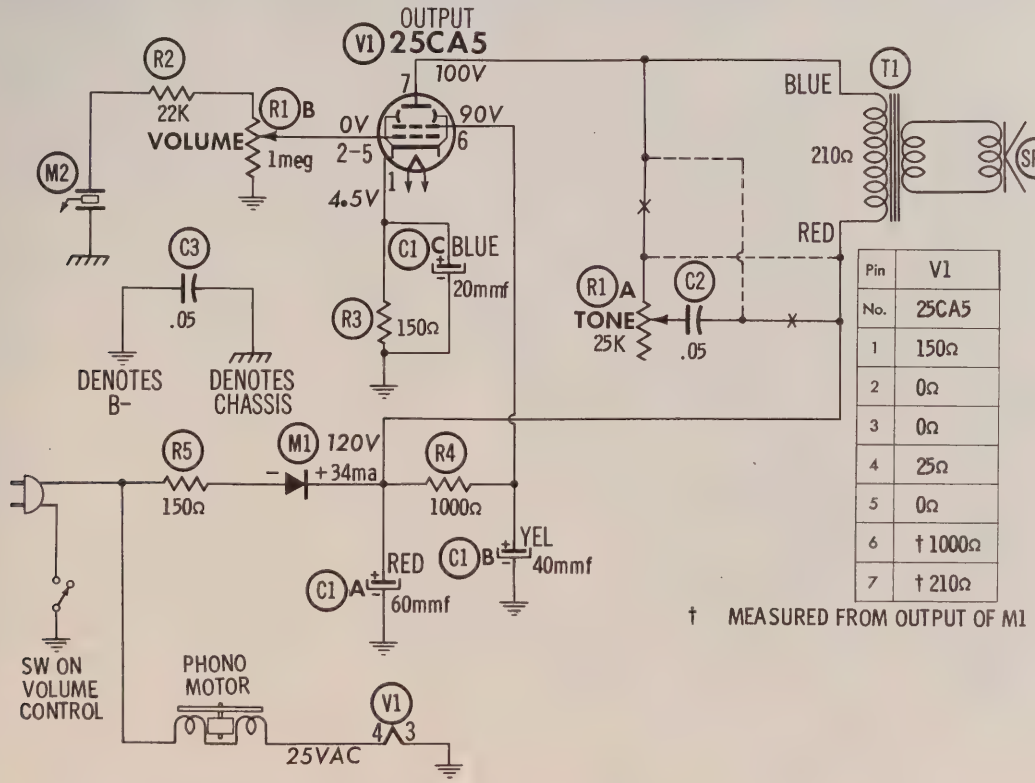
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FIRESTONE MODEL 4-A-173 (Code 364-7-165)

FIRESTONE MODEL
4-A-173 (Code 364-7-165)

TRADE NAME	Firestone Model 4-A-173 (Code 364-7-165)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (One)	Type 25CA5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .41 Amp. @ 117 Volts AC (42 Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE V-M MODEL 959—PHOTOFACT SET 396 FOLDER 13



Pin	V1
No.	25CA5
1	150Ω
2	0Ω
3	0Ω
4	25Ω
5	0Ω
6	† 1000Ω
7	† 210Ω

† MEASURED FROM OUTPUT OF M1

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SET 401 FOLDER 6

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	25CA5	

ITEM No.	USE	TYPE	NOTES

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	1016A	PRS150/25V	BBRQ44315C	TCT3117		FMT-312	R2451 *
B	40	150		5050/20				MMT-0220	
C	20	25							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C3	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FIRESTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	25K	½	417A	F1-27		♦	■	Tone
B	1meg	½		R2-52				Volume
C	Switch			KB-1				

♦ "Concentrikit" Equivalent: K-6 Kit, Base Elements and Shafts B11-120, P14-019 (Panel) B13-137, R1-028 (Rear) 76-1 (Switch)

■ "STA-LOC" Equivalent: FA253L, OS625, RU16A, IS937, US-41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R2	22K			
R3	150Ω			

ITEM No.	RATING OHMS	RATING WATT	FIRESTONE PART No.	NOTES
R4	1000Ω			
R5	150Ω			Fuse Type

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA FIRESTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2700Ω	3-4Ω	Part of SP1	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

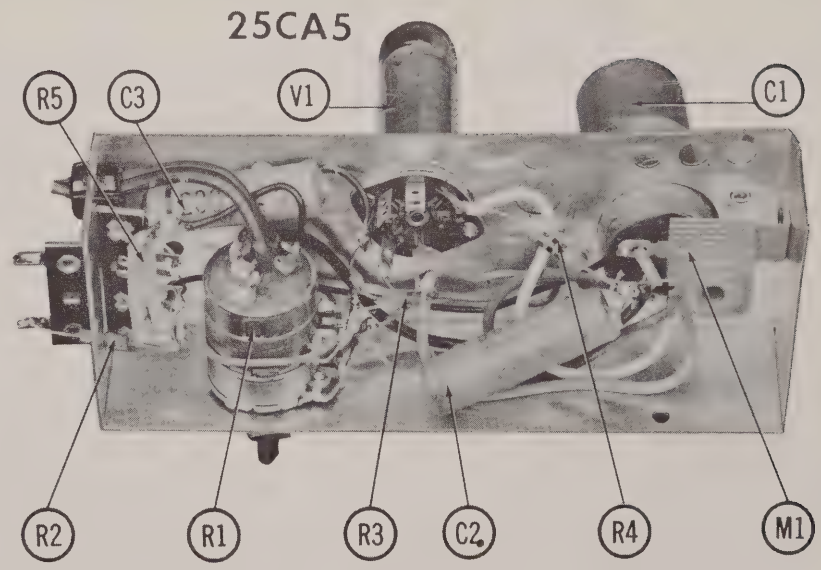
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA FIRESTONE PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	2634 ①	5A1	① Includes T1 and mounting bracket

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FIRESTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.034A	2723	1263	RS050	50	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA FIRESTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M2	2591 ①	414-2	N8-2			① Includes Needle

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA FIRESTONE PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	2591A	† CRA-552 or ♦ CRA-552D	† W64AGS or ♦ W64AGD	♦ Diamond † Jewel

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	2429	On-Off Volume
Knob	2429A	Tone
Cabinet	2067A	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

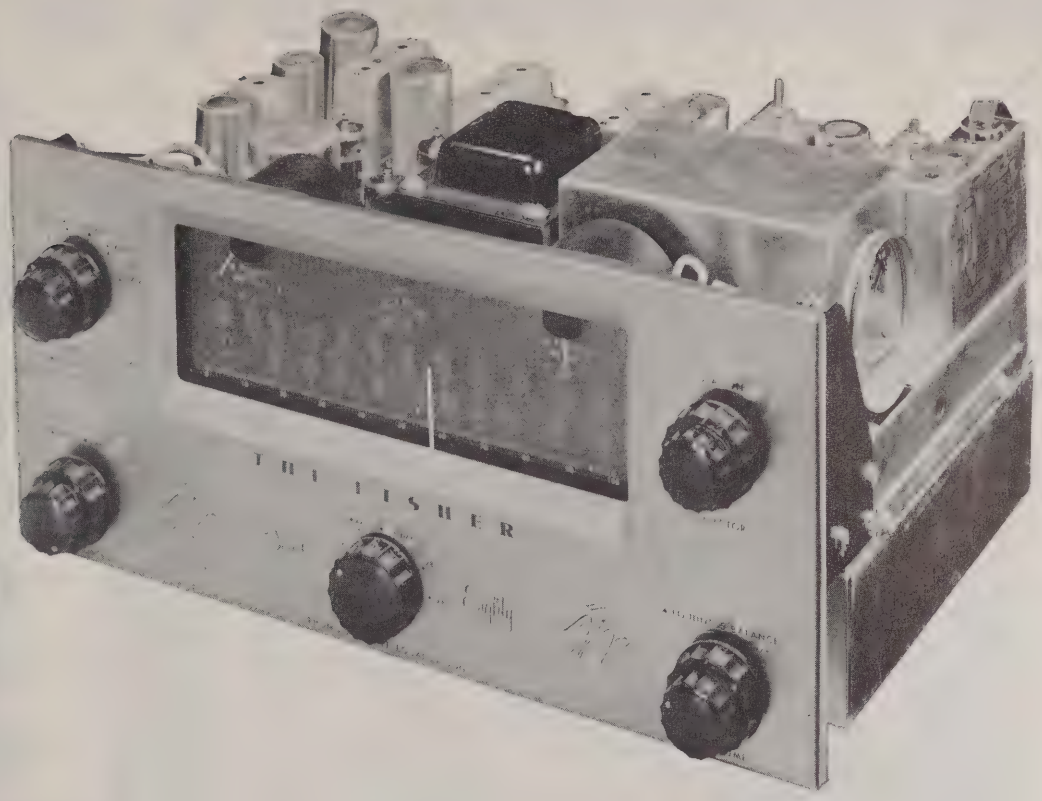
PHOTOFACT* Folder

*TRADE MARK

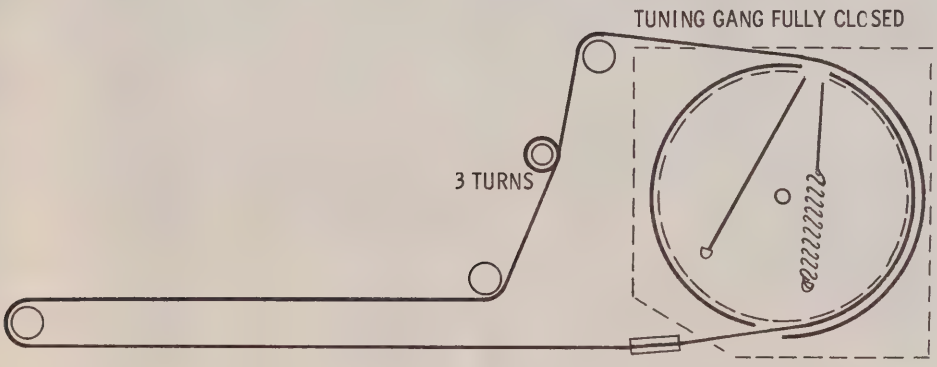
EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

FISHER MODELS 80-R, 80-T

FISHER MODELS
80-R, 80-T



TRADE NAME	Fisher Models 80-R (Tuner Only), 80-T (Tuner & Preamp. Chassis)		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.		
TYPE SET	AC Operated FM-AM Tuner With Preamplifier		
TUBES	Sixteen		
POWER SUPPLY	105-125 Volts AC-50/60 Cycles	RATING	.54 Amp. @ 117 Volts AC (56 Watts)
TUNING RANGE—BROADCAST	540-1620KC	FREQ. MOD.	88-108MC



FISHER MODELS
80-R, 80-T

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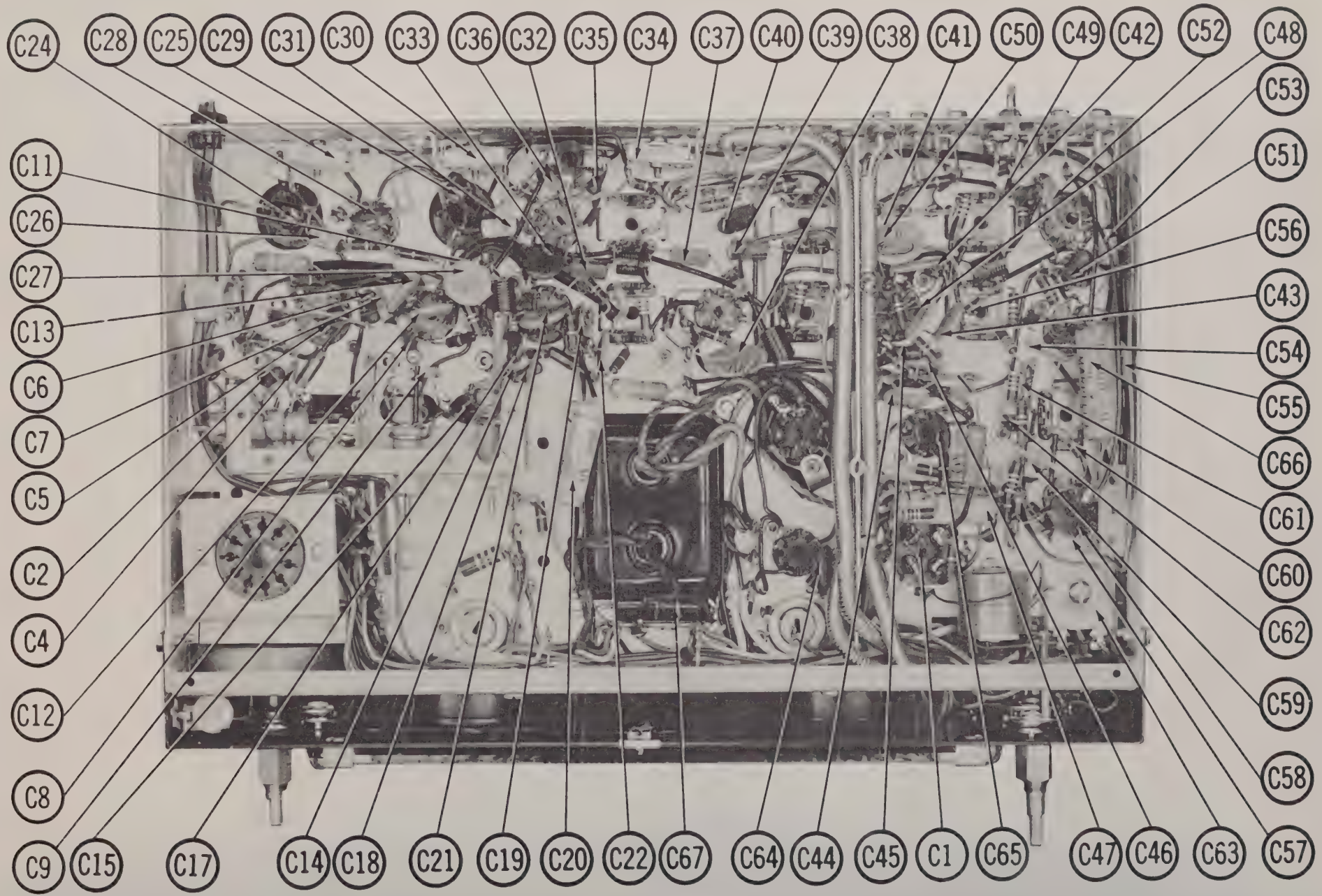
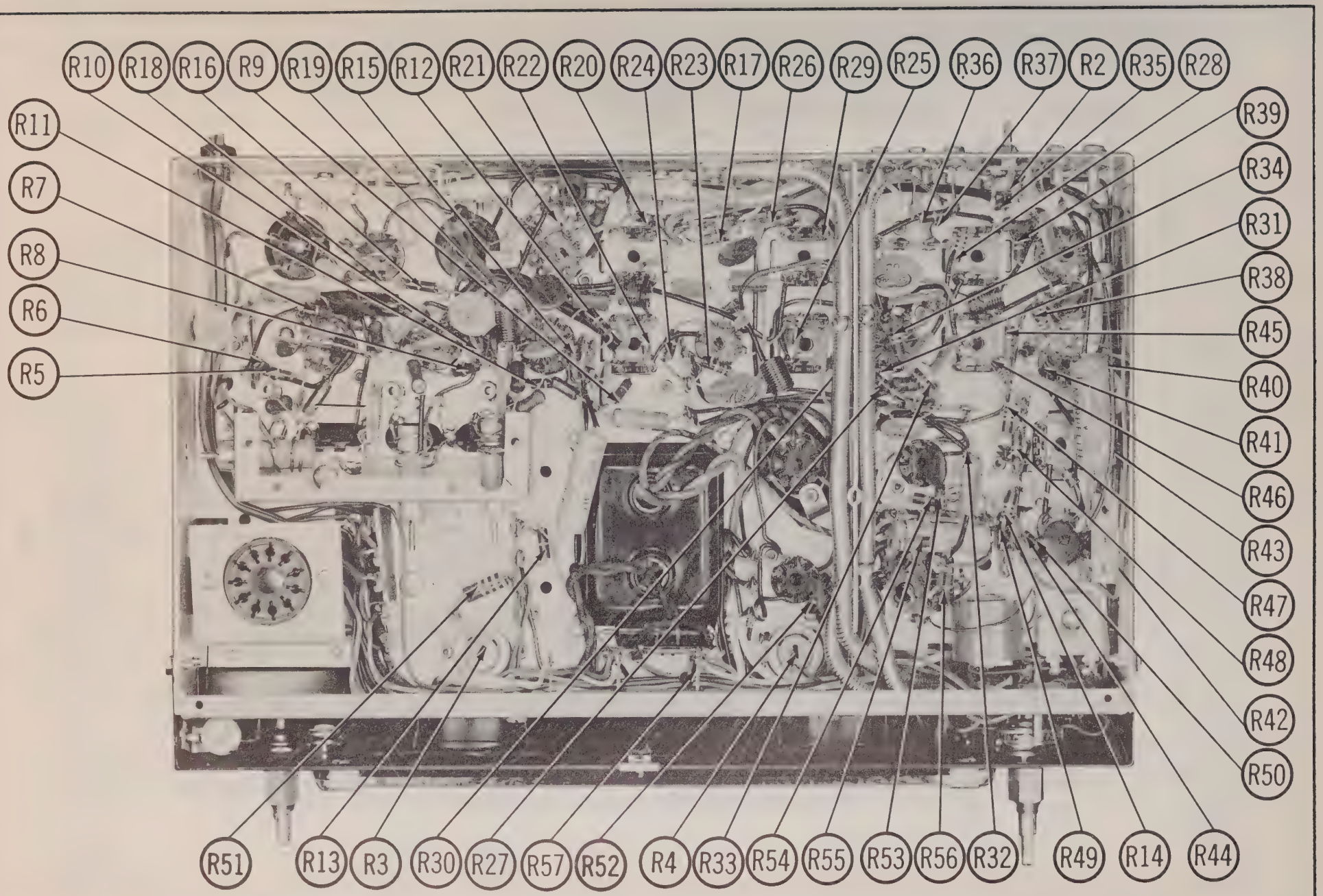
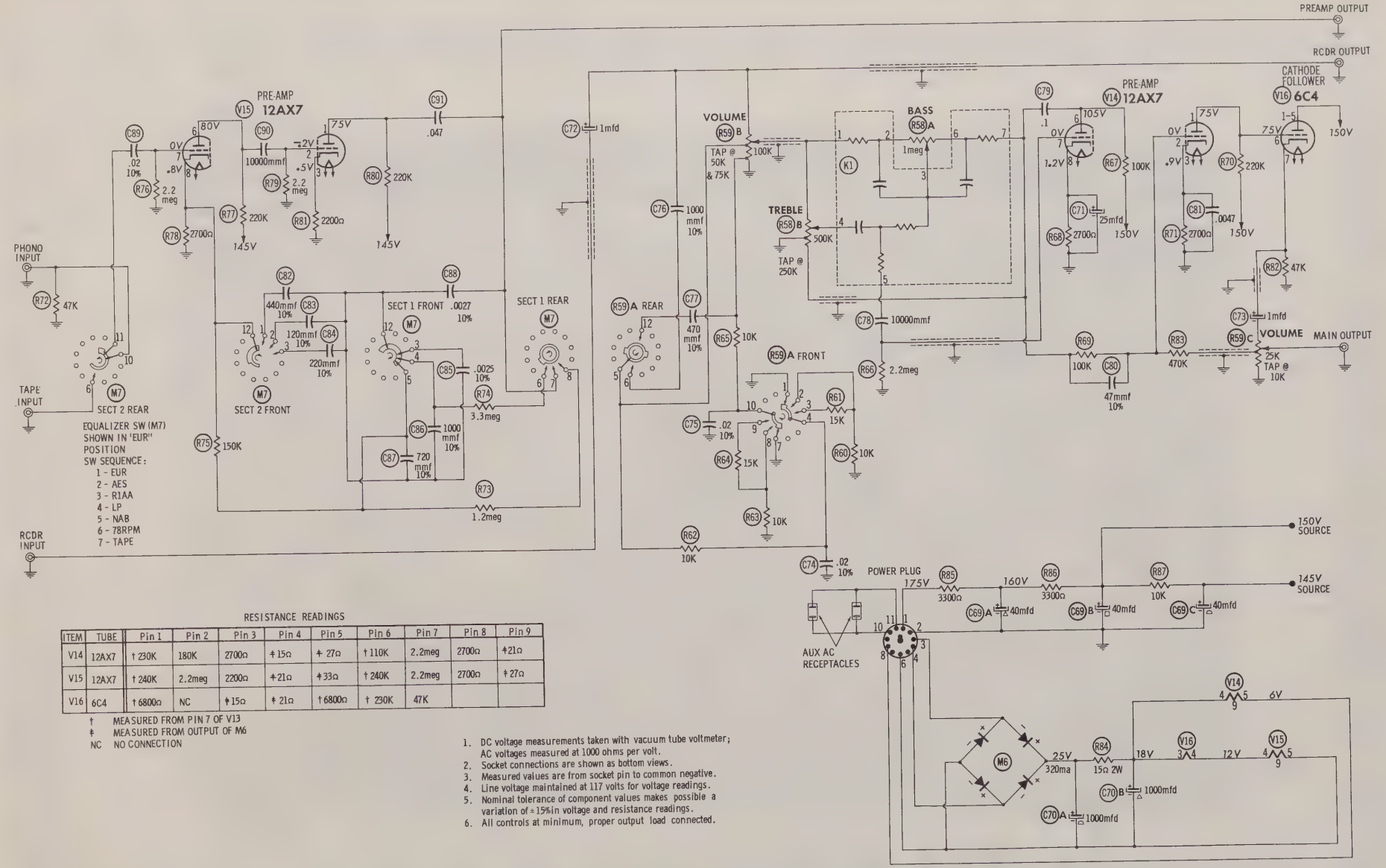


TUNER CHASSIS BOTTOM VIEW--CAPACITOR IDENTIFICATION



TUNER CHASSIS BOTTOM VIEW--RESISTOR IDENTIFICATION

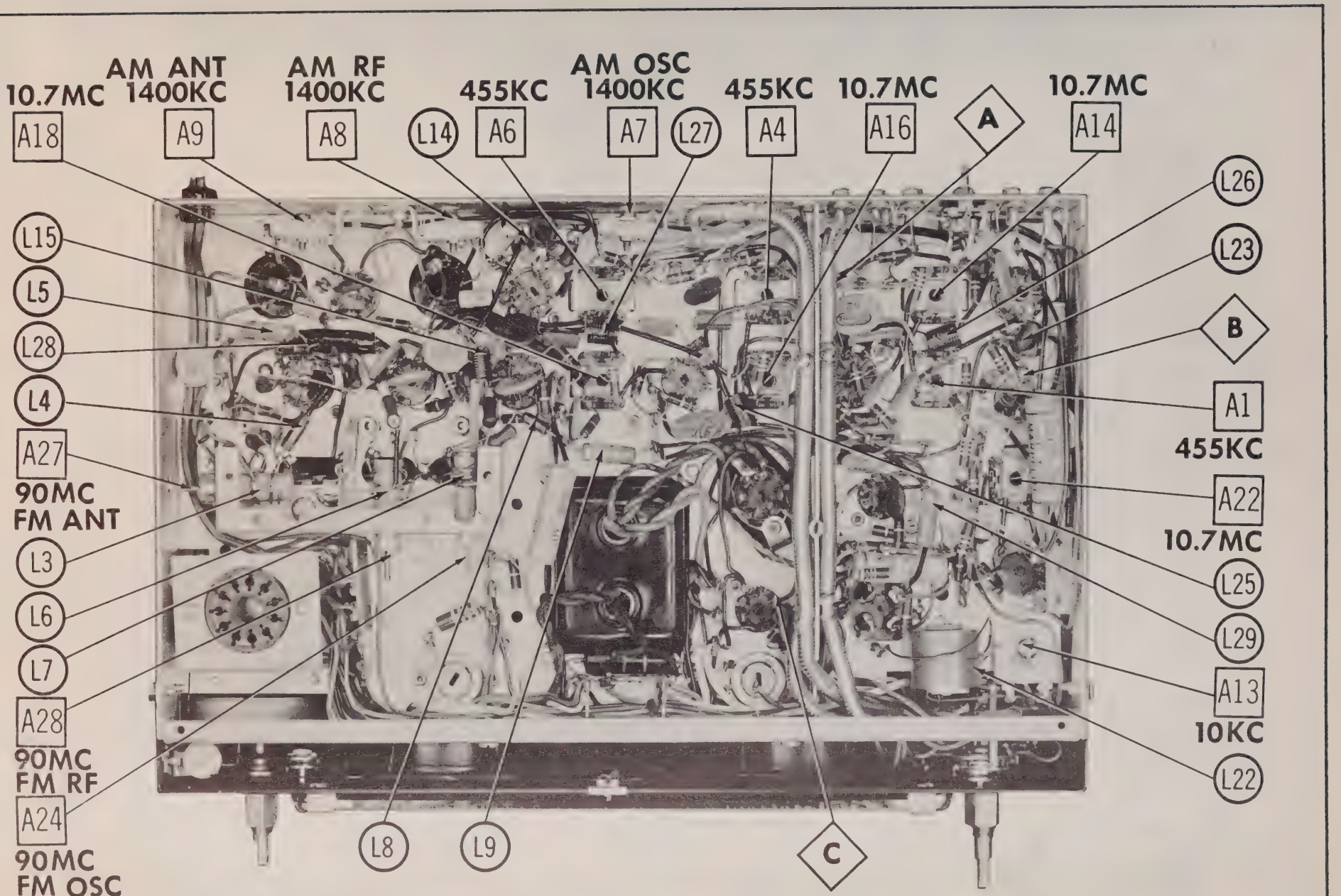


RESISTANCE READINGS

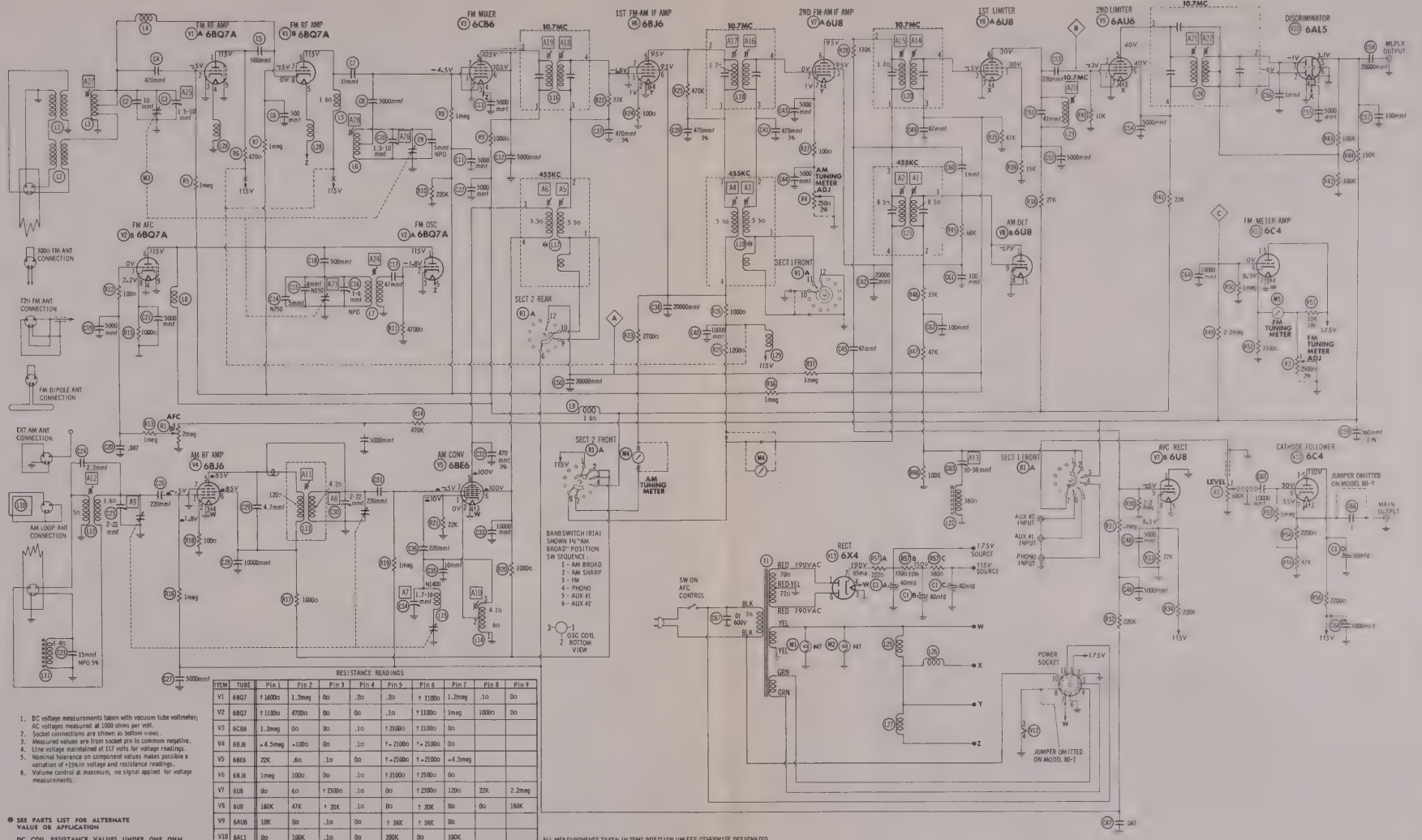
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V14	12AX7	† 230K	180K	2700Ω	‡ 15Ω	‡ 27Ω	† 110K	2.2meg	2700Ω	‡ 21Ω
V15	12AX7	† 240K	2.2meg	2200Ω	‡ 21Ω	‡ 33Ω	† 240K	2.2meg	2700Ω	‡ 27Ω
V16	6C4	† 6800Ω	NC	‡ 15Ω	‡ 21Ω	† 6800Ω	† 230K	47K		

† MEASURED FROM PIN 7 OF V13
‡ MEASURED FROM OUTPUT OF M6
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



TUNER CHASSIS BOTTOM VIEW—ALIGNMENT & INDUCTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BQ7	†1600Ω	1.2meg	0Ω	.2Ω	.2Ω	†1100Ω	1.2meg	.1Ω	0Ω
V2	6BQ7	†1100Ω	4700Ω	0Ω	0Ω	.1Ω	†1100Ω	1meg	1000Ω	0Ω
V3	6CB6	1.2meg	0Ω	0Ω	.1Ω	†2100Ω	†2100Ω	0Ω		
V4	6BJ6	*4.5meg	*100Ω	0Ω	.1Ω	†=2100Ω	†=2100Ω	0Ω		
V5	6BE6	22K	.6Ω	.1Ω	0Ω	†=2100Ω	†=2100Ω	*4.5meg		
V6	6BJ6	1meg	100Ω	0Ω	.1Ω	†2100Ω	†2100Ω	0Ω		
V7	6U8	0Ω	6Ω	†2300Ω	.1Ω	0Ω	†2300Ω	120Ω	22K	2.2meg
V8	6U8	180K	47K	† 20K	.1Ω	0Ω	† 20K	0Ω	0Ω	180K
V9	6AU6	10K	0Ω	.1Ω	0Ω	† 24K	† 24K	0Ω		
V10	6AL5	0Ω	100K	.1Ω	0Ω	280K	0Ω	180K		
V11	6C4	†220Ω	NC	0Ω	.1Ω	†220Ω	600K	1300Ω		
V12	6C4	†3300Ω	TP	.1Ω	0Ω	†3300Ω	1meg	49K		
V13	6X4	70Ω	NC	0Ω	.1Ω	NC	72Ω	20K(Min)		

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 7 OF V13
* MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

401-7

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting. Set AFC Control (R1B) to minimum.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	455KC (400∿ Mod)	AM (Sharp)	1000KC (Approx.)	Across main output jack	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	"	"	455KC (FM Mod) (30KC Swp)	AM (Broad)	"	Scope across main output jack	A1	SLIGHTLY retouch A1 for symmetrical response on scope. If equipment is not available omit this step.
3.	200mmf	High side to pin 3 of AM Antenna socket. Low side to chassis.	1400KC (400∿ Mod)	AM (Sharp)	1400KC	Across main output jack	A7, A8, A9	Remove loop. Connect jumper between pins 2 and 4 of socket. Adjust for maximum output.
4.	"	"	600KC	"	600KC	"	A10, A11, A12	Adjust for maximum output. Repeat steps 3 and 4.
5.	"	High side to pin 1 (plate) of 6U8 (V8). Low side to chassis.	10KC			"	A13	Adjust for MINIMUM output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.		High side to an ungrounded tube shield on 6CB6 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis	A14, A15, A16, A17, A18, A19	Adjust for maximum deflection.
7.		"	"	"	"	DC probe thru 1meg resistor to point Ⓑ. Common to chassis.	A20	"
8.		"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A21	Slightly detune A22. Adjust A21 for maximum deflection.
9.		"	"	"	"	"	A22	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.		High side to an ungrounded tube shield on 6CB6 (V3). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A14, A15, A16, A17, A18, A19	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
7.		"	"	"	"	Vert. Amp. thru 1meg resistor to point Ⓑ. Low side to chassis.	A20	"
8.		"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A21, A22	Adjust A22 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. Adjust A21 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across pins 2 and 3 of FM Antenna socket with 120Ω in each lead.	106MC (400∿FM Mod) (45KC Swp)	FM	106MC	DC probe to point Ⓐ. Common to chassis.	A23	Connect junper between pins 1 and 4. Adjust for maximum deflection.
11.	"	"	90MC	"	90MC	"	A24	Adjust for maximum deflection. Repeat steps 10 and 11.
12.	"	"	106MC	"	106MC	"	A25, A26	Adjust for maximum deflection.
13.	"	"	90MC	"	90MC	"	A27, A28	Adjust for maximum deflection. Repeat steps 12 and 13.

FIG. 1

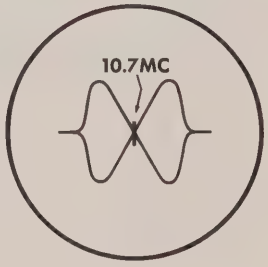
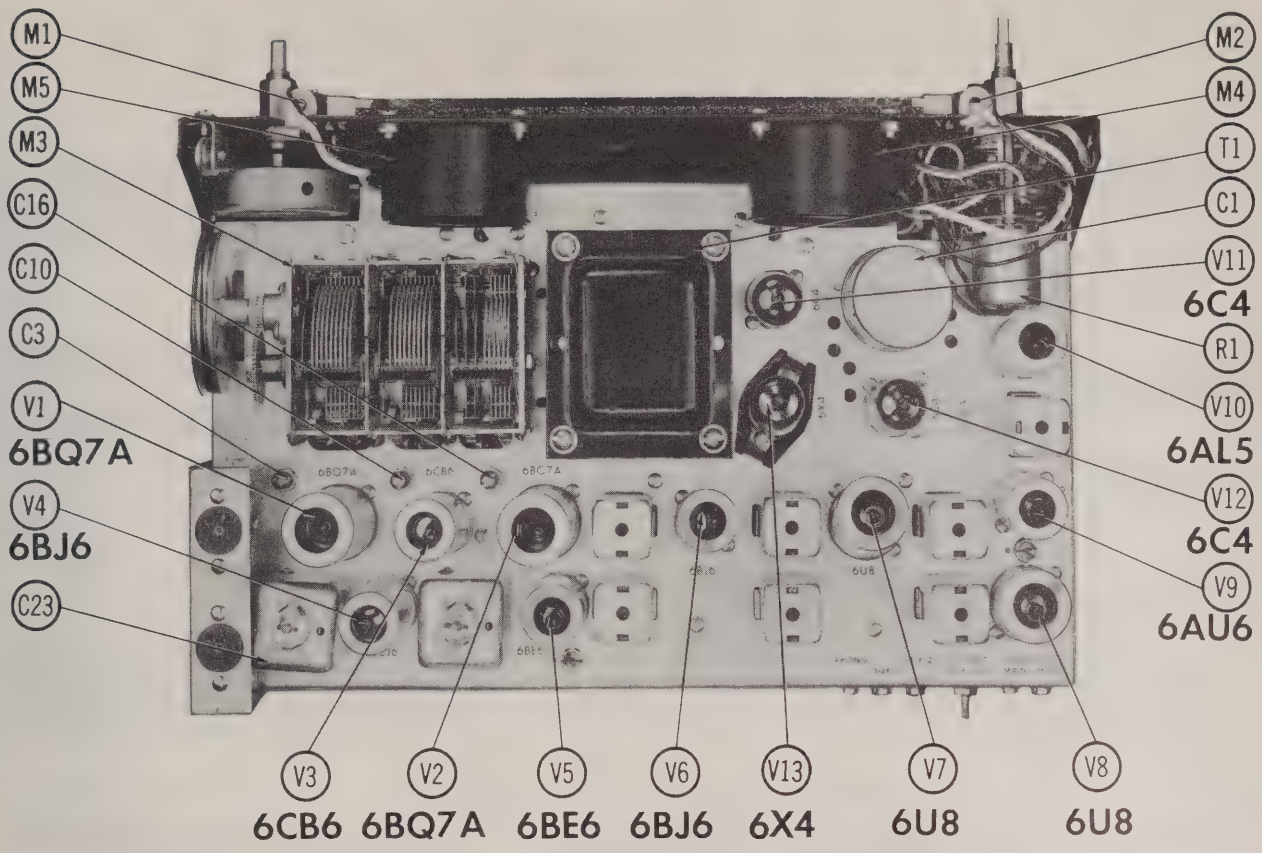
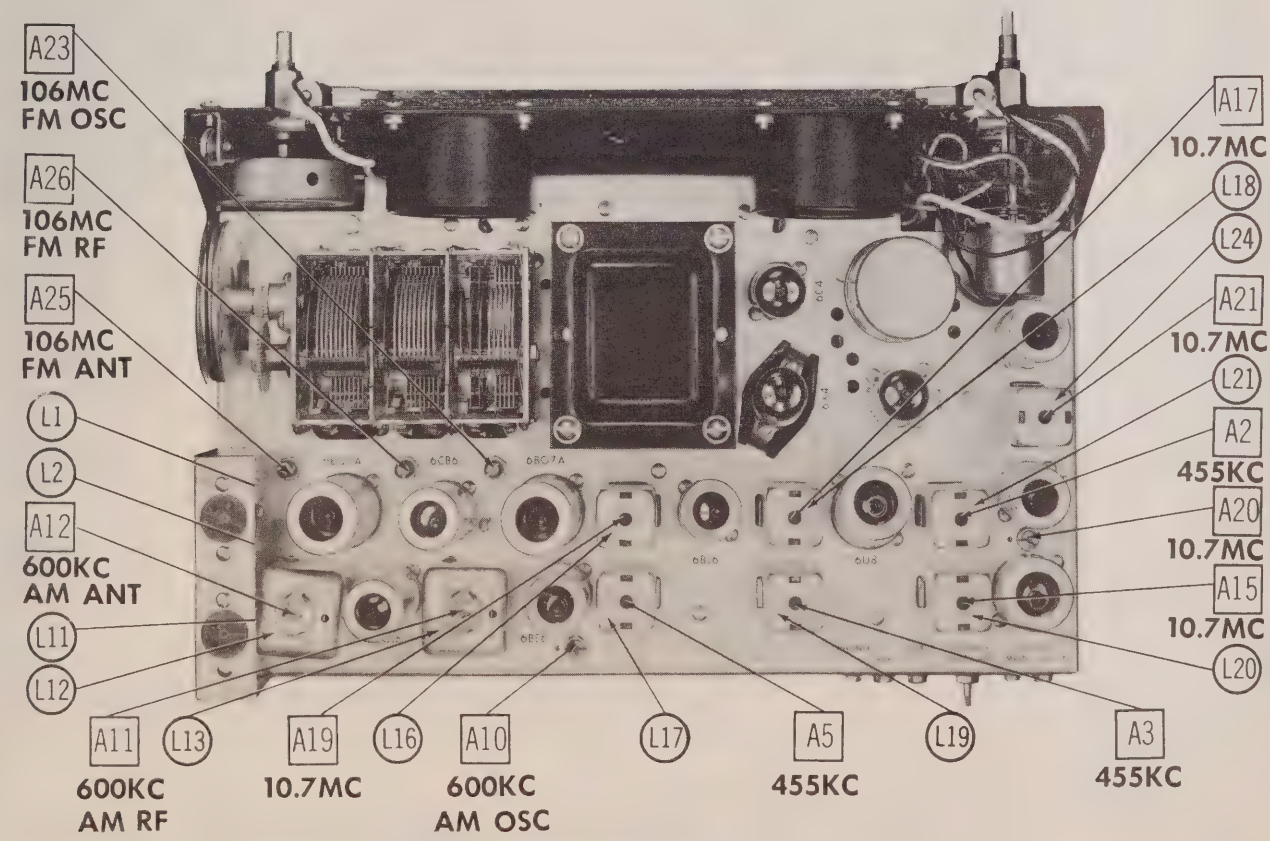


FIG. 2



TUNER CHASSIS —TOP VIEW



TUNER CHASSIS—TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6BQ7A	
V2	FM Osc. - FM AFC	6BQ7A	
V3	FM Mixer	6CB6	
V4	AM RF Amplifier	6BJ6	
V5	AM Converter	6BE6	
V6	1st FM - AM IF Amp.	6BJ6	
V7	2nd FM - AM IF Amp. AVC Rectifier	6U8	

ITEM No.	USE	TYPE	NOTES
V8	1st Limiter - AM Det.	6U8	
V9	2nd Limiter	6AU6	
V10	Discriminator	6AL5	
V11	FM Meter Amp.	6C4	
V12	Cathode Follower	6C4	
V13	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	250	C-550-130				TMT-23	T-102	R2319 *
B	■40	200					TD-30-250	MT-4530	
C	▲40	200							
D	30	200							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10		CC20CH100G5	SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C3	1.5-10		C-520-158		829-10				
C4	470		C-520-143	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C5	500		C-1315	SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C6	500		C-1315	SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C7	33		CC21GP330M5	SI 33	D6-330	LT6Q33	UC-5433	5GA-Q33	
C8	5000		C-3338	SI 5000	D6-502	LT6D5	UC-525	5GA-D5	
C9	5		CC20CH050F5	NPO-SI 5	TCZ-4R7	C10V5C	ZT-555	5TCCB-V5	NPO
C10	1.5-10		C-520-158		829-10				
C11	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC-525	5HK-D5	
C12	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC-525	5HK-D5	
C13	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC-525	5HK-D5	
C14	5		CC20UJ050F5	N750-SI 5	TCN-5	CTA6V5U	NT-555	5TCUB-V5	N750
C15	4		CC20PK040K5						N150
C16	1-6		C-520-159		829-6				NPO
C17	47		C-3350	SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C18	500		C-1315	SI 500	D6-501	LT6T5	UC-535	5GA-T5	
C19	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C20	.047	200	C-68P473M2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C21	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C22	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C23	15		C-550-136	1469-000015	TCZ-15	22R5Q15		MS-415	NPO 5%
C24	2.2		C-3039	NPO-SI 2.2	C10V22C			5TCCB-V22	
C25	2-22		C-550-129						
C26	220		CC21GP221M5	SI 220	D6-221	LT6T22	UC-5322	5GA-T22	
C27	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C28	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C29	4.7		C-1779	NPO-SI 4.7	TCZ-4R7	C10V47C	ZT-5547	5TCCB-V47	
C30	2-22		C-550-129						
C31	220		CC21GP221M5	SI 220	D6-221	LT6T22	UC-5322	5GA-T22	
C32	470		C-3334	1464-00047		5R5T47		MS-347	5%
C33	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C34	1.7-16		C-550-144						
C35	10		CC20VK100G5						N1400
C36	220		CC21GP221M5	SI 220	D6-221	LT6T22	UC-5322	5GA-T22	
C37	470		C-3334	1464-00047		5R5T47		MS-347	5%
C38	20000		CK63GP203V6	BPD-02	DD-203	BYB6S2		5HK-S2	
C39	470		C-3334	1464-00047		5R5T47		MS-347	5%
C40	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C41	470		C-3334	1464-00047		5R5T47		MS-347	5%
C42	20000		CK63GP203V6	BPD-02	DD-203	BYB6S2		5HK-S2	
C43	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C44	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C45	47		C-3350	SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C46	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	

TUNER PARTS LIST AND DESCRIPTIONS (cont)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C47	.047	200	C-68P473M2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C48	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C49	47		C-3350	SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C50	20000		CK63GP203V6	BPD-02	DD-203	BYB6S2		5HK-S2	
C51	47		C-3350	SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C52	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C53	220		CC21GP221M5	SI 220	D6-221	LT6T22	UC-5322	5GA-T22	
C54	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C55	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C56	1		C-1786	NPO-SI L 0	TCZ-1			5TCCB-V1	
C57	100		CC21GP101M5	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C58	20000		C-556-122	BPD-02	DD-203	BYB6S2		5HK-S2	
C59	560		CC21GP561K5		D6-561	1R5T56		MS-356	10%
C60	1		C-1786	NPO-SI L 0	TCZ-1			5TCCB-V1	
C61	100		CC21GP101M5	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C62	100		CC21GP101M5	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C63	30-38		C-3347						
C64	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C65	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C66	.1	200	C-68P104M2	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C67	.01	600	C-2747	P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C68	5000		CK62GP502V6	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	①

① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Switch		RS550-124					Band Selector
B	2meg	½						AFC
C	Switch							Power On-Off
R2	500K	½	R520-139	JP-504				Level
R3	2500Ω	2(WW)	R550-135-1		39-3000		FL-2.5K	FM Tuning Meter Adj.
R4	250Ω	2(WW)	R550-135-2		39-300			AM Tuning Meter Adj.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R5	1meg		RC20BF105K	
R6	470Ω		RC20BF471K	
R7	1meg		RC20BF105K	
R8	1meg		RC20BF105K	
R9	1000Ω		RC20BF102K	
R10	220K		RC20BF224K	
R11	4700Ω		RC20BF472K	
R12	100Ω		RC20BF101K	
R13	1meg		RC20BF105K	
R14	470K		RC20BF474K	
R15	1000Ω		RC20BF102K	
R16	1meg		RC20BF105K	
R17	1000Ω		RC20BF102K	
R18	100Ω		RC20BF101K	
R19	1meg		RC20BF105K	
R20	1000Ω		RC20BF102K	
R21	22K		RC20BF223K	
R22	33K		RC20BF333K	
R23	2700Ω		RC20BF272K	
R24	100Ω		RC20BF101K	
R25	470K		RC20BF474K	
R26	1000Ω		RC20BF102K	
R27	100Ω		RC20BF101K	
R28	330K		RC20BF334K	
R29	1200Ω		RC20BF122K	
R30	2.2meg		RC20BF225K	
R31	1meg		RC20BF105K	
R32	220K		RC20BF224K	

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R33	22K		RC20BF223K	
R34	220K		RC20BF224K	
R35	47K		RC20BF473K	
R36	1meg		RC20BF105K	
R37	1meg		RC20BF105K	
R38	27K		RC20BF273K	
R39	15K		RC20BF153K	
R40	10K		RC20BF103K	
R41	22K		RC20BF223K	
R42	100K		RC20BF104K	
R43	100K		RC20BF104K	
R44	150K		RC20BF154K	
R45	68K		RC20BF683K	
R46	33K		RC20BF333K	
R47	47K		RC20BF473K	
R48	100K		RC20BF104K	
R49	2.2meg		RC20BF225K	
R50	1meg		RC20BF105K	
R51	33K	1	RC30BF333K	
R52	3300Ω		RC20BF332K	
R53	1meg		RC20BF105K	
R54	2200Ω		RC20BF222K	
R55	47K		RC20BF473K	
R56	2200Ω		RC20BF222K	
R57A	222Ω			
B	330Ω	10	R-550-134	
C	580Ω			

TUNER PARTS LIST AND DESCRIPTIONS (cont)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .54A	380VCT @ .065A	21V @ .5A	T-550-115B						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 4.2A									

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		FISHER PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	L-509-139	15-1082	TV-172	6202	BC-501	
L2	FM Ant. Coil	L-509-139	15-1082	TV-172	6202	BC-501	
L3	FM Ant. Trans.	AS-520-177					
L4	RF Choke	L-520-178	19-1002	BC-563	4606		2 Microhenries
L5	RF Choke	L-3352	19-1002	BC-563	4606		2.2 Microhenries; IRC Part #CLA
L6	FM Mixer Coil	AS-520-176					
L7	FM Osc. Coil	AS-520-174					
L8	RF Choke	L-509-147	19-1003	BC-564	4608		3.5 Microhenries
L9	RF Choke	L-3352	19-1002	BC-563	4606		2.2 Microhenries; IRC Part #CLA
L10	Loop Antenna	L-509-133					
L11	AM Ant. Coil	L-509-135	19-7047	TV-180	6176		45 Microhenries
L12	AM Ant. Trans.	L-509-137	14-7413	BC-383	73-A		
L13	AM RF Trans.	L-550-123					
L14	AM Osc. Coil	L-550-122	14-1055		70-Osc.*		
L15	RF Choke	L-520-156	19-1000	BC-561	4602		1.2 Microhenries
L16	1st FM IF	ZZ-2987	16-3487	FM-254	1463		
L17	1st AM IF	ZZ-509-132D					Note 1
L18	2nd FM IF	ZZ-509-130	16-3487	FM-254	1463		
L19	2nd AM IF	ZZ-509-132D					Note 1
L20	3rd FM IF	ZZ-509-130	16-3487	FM-254	1463		
L21	3rd AM IF	ZZ-2984	16-6758	BC-353	12-C2	RF-2	
L22	10KC Filter	L-509-145					1 Henry
L23	FM Limiter	L-550-131			4203		
L24	FM Discr.	ZZ-550-145	17-3494	FM-253	1464		
L25	Fil. Choke	L-520-156	19-1000	BC-561	4602		1.2 Microhenries
L26	Fil. Choke	L-520-156	19-1000	BC-561	4602		1.2 Microhenries
L27	Fil. Choke	L-520-156	19-1000	BC-561	4602		1.2 Microhenries
L28A	Fil. Choke	L-509-140	19-1002	BC-563	4606		2.5 Microhenries
B	Fil. Choke		19-1002	BC-563	4606		2.5 Microhenries
L29	RF Choke	L-3352	19-1002	BC-563	4606		2.2 Microhenries; IRC Part #CLA

Note 1. Alternate Part #ZZ-509-132. * Disregard Primary.

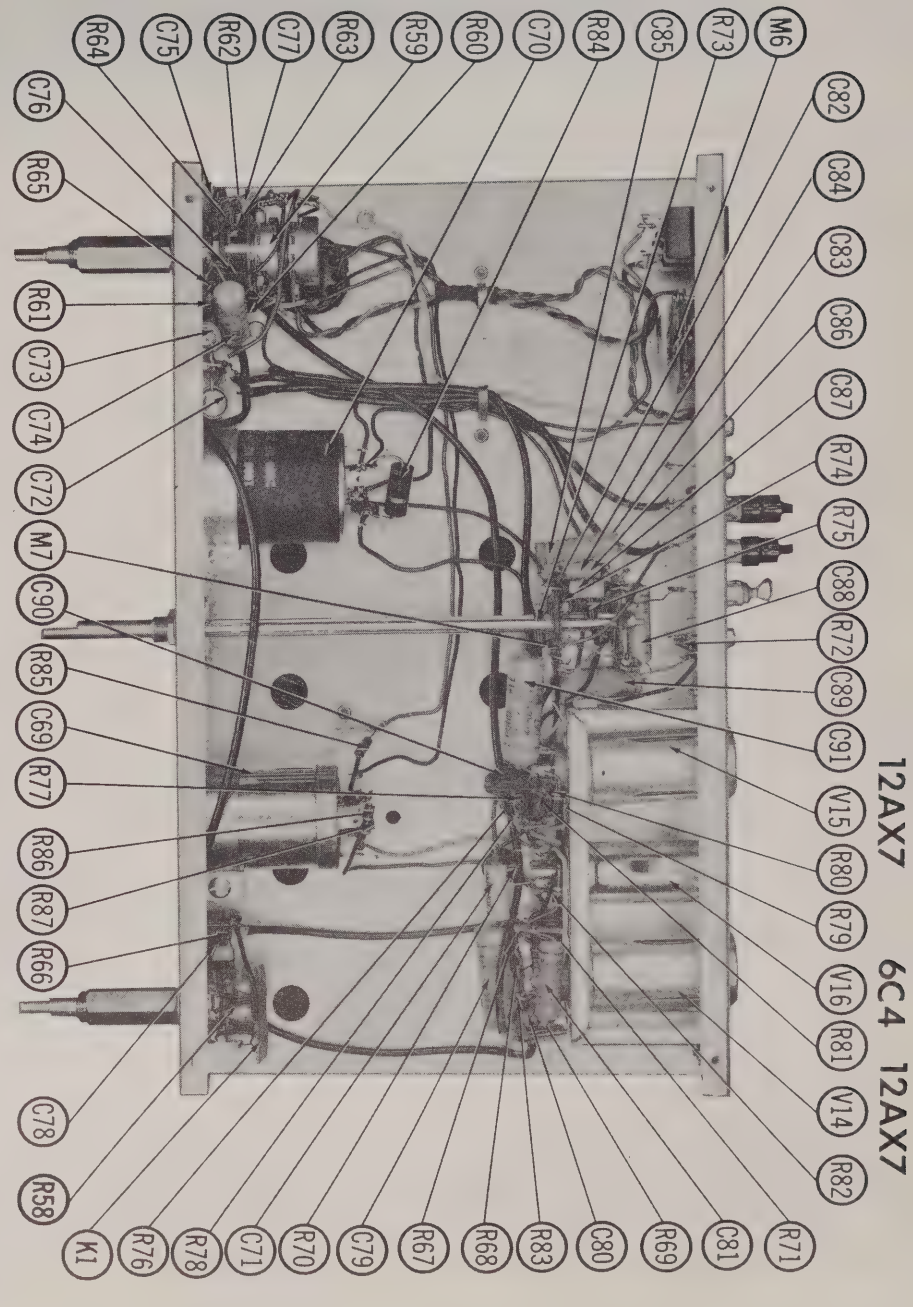
MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M1	Dial Lamp	I-50009-1	#47
M2	Dial Lamp	I-50009-1	#47
M3	Tuning Cap.	C-550-118	AM-FM, 6 Gang (AM Sections: Ant. 12-270mmf, RF 12-270mmf, Osc. 10-153mmf)
M4	Meter	M-550-132-1	AM Tuning
M5	Meter	M-550-132-2	FM Tuning

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

AMP CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS

AMP

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V14	Preamplifier	12AX7	
V15	Preamplifier	12AX7	

ITEM No.	USE	TYPE	NOTES
V16	Cathode Follower	6C4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C69A	▲40	200	C-520-117	AFH3-44	D0022	FP377	TMT-23	T-102	TVL-3787
B	■40	200							
C	▲40	200							R2619 *
C70A	▲1000	25	C-552-106		A0130				
B	▲1000	25			A0130				
C71	25	6	C-556-137	PWE6025	BBR25-6	TT6X25	ML30-6	MMT-625	TE-1091
C72	1	250	C-546-126	PRS450V1	BR145			MMT-4501	R2605 *
C73	1	250	C-546-126	PRS450V1	BR145			MMT-4501	R2605 *

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C74	.02	200	C68P203K2				GEM-1612		10%
C75	.02	200	C68P203K2				GEM-1612		10%
C76	1000		CC26GP102K5			1R5D1	MCB255	MS-21	10%
C77	470		CC21GP471K5		D6-471	1R5T47		MS-347	10%
C78	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C79	.1	400	C68P104M4	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C80	47		CC21GP470K5		D6-470	L10Q47		MS-447	10%
C81	.0047	200	C68P472M2	P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C82	440		CC21GP441K5						10%
C83	120		CC21GP121K5		D6-121	L10T12		MS-312	10%
C84	220		CC21GP221K5		D6-221	L10T22		MS-322	10%
C85	.0025	200	C68P252K2				GEM-16225		10%
C86	1000		CC26GP102K5			1R5D1	MCB255	MS-21	10%
C87	720		CC21GP721K5						10%
C88	.0027	200	C68P272K2						10%
C89	.02	200	C68P203K2				GEM-1612		10%
C90	10000		CK62GP103V6	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C91	.047	400	C68P473M4	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R58A	1meg	½	R552-118	F1-51		♦	UE1716	Bass
B	500K	½		R4-42				Treble, Tap ② 250K
R59A	Switch		RS552-125					Loudness
B	100K	½						Volume, Tap ② 50K & 75K
C	25K	½						Volume, Tap ② 10K

♦ "Concentrikit" Equivalent; K-6 Kit, Base Elements and Shafts: B11-137, P13-128 (Panel) B19-133X, R1-205 (Rear)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R60	10K		RC20BF103K	
R61	15K		RC20BF153K	
R62	10K		RC20BF103K	
R63	10K		RC20BF103K	
R64	15K		RC20BF153K	
R65	10K		RC20BF103K	
R66	2.2meg		RC20BF225K	
R67	100K		RC20BF104K	
R68	2700Ω		RC20BF272K	
R69	100K		RC20BF104K	
R70	220K		RC20BF224K	
R71	2700Ω		RC20BF272K	
R72	47K		RC20BF473K	
R73	1.2meg		RC20BF125K	

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R74	3.3meg		RC20BF335K	
R75	150K		RC20BF154K	
R76	2.2meg		RC20BF225K	
R77	220K		RC20BF224K	
R78	2700Ω		RC20BF272K	
R79	2.2meg		RC20BF225K	
R80	220K		RC20BF224K	
R81	2200Ω		RC20BF222K	
R82	47K		RC20BF473K	
R83	470K		RC20BF474K	
R84	15Ω	2	RC40BF150K	
R85	3300Ω		RC20BF332K	
R86	3300Ω		RC20BF332K	
R87	10K		RC20BF103K	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FISHER PART No.	REPLACEMENT DATA
K1	Tone Compensation		PC-552-105	

RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA FISHER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M6	.320A		1017 ①	C1B ①	604B ①	① Selenium Type
					D-61 ②	② Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M7	Switch	S-552-113	Equilazation Selector, 2 Gang Rotary Wafer Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

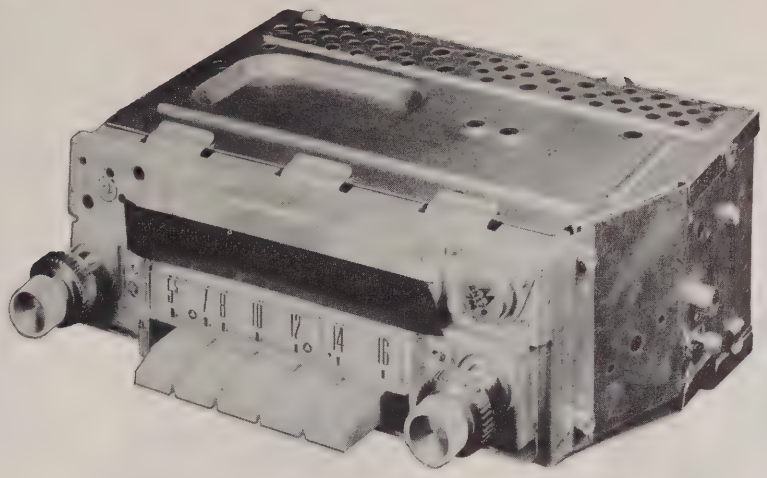
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder
*TRADE MARK

FORD MODELS 74MF (B7A-18805-A1), 84MF (B8A-18805-B)

FORD MODELS 74MF (B7A-18805-A1), 84MF (B8A-18805-B)



TRADE NAME	Ford Models 74MF (B7A-18805-A1) For 1957 Ford Automobiles; 84MF (B8A-18805-B) For 1958 Ford Automobiles
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver With Transistorized Output
TUBES (Four)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DL8 Det.-AVC- AF Amp.
POWER SUPPLY	12 Volt Storage Battery
RATING	1.3 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400∿ Mod)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle	1610KC	"	"	A5, A6, A7	"
	Steps 3, 4 & 5 are not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) 1 3/8" out of coils.						
3.	Fig. 1	Thru dummy to antenna receptacle	1610KC	High frequency end stop	Across voice coil	A5, A6, A7	Adjust for maximum output.
4.	"	"	1020KC	49/64" from high freq. end stop	"	A8, A9, A10	"
5.	"	"	1610KC	High frequency end stop	"	A5, A6, A7	Adjust for maximum output. Repeat steps 4 & 5. Cement cores.
6.	"	"	600KC (5 Microvolt)	Maximum signal	"	R2	Adjust R2 for 1.79 Volts output.

With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.

POINTER ADJUSTMENT

With receiver tuned to a 1000KC signal, adjust pointer adjusting screw until pointer coincides with the 1000KC dial calibration.

PUSHBUTTON ADJUSTMENT

1. Allow receiver to warm up for 15 minutes. Extend antenna.
2. Pull pushbutton out.
3. Tune manually to desired station.
4. Press pushbutton in firmly.
5. Repeat for remaining pushbuttons.

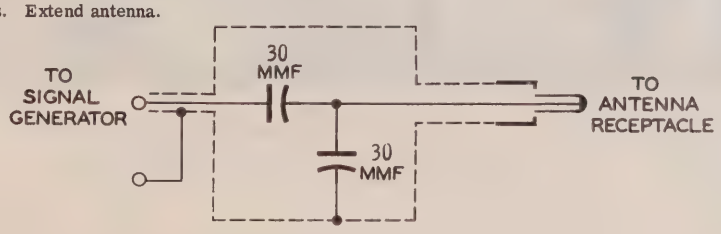


FIG. 1

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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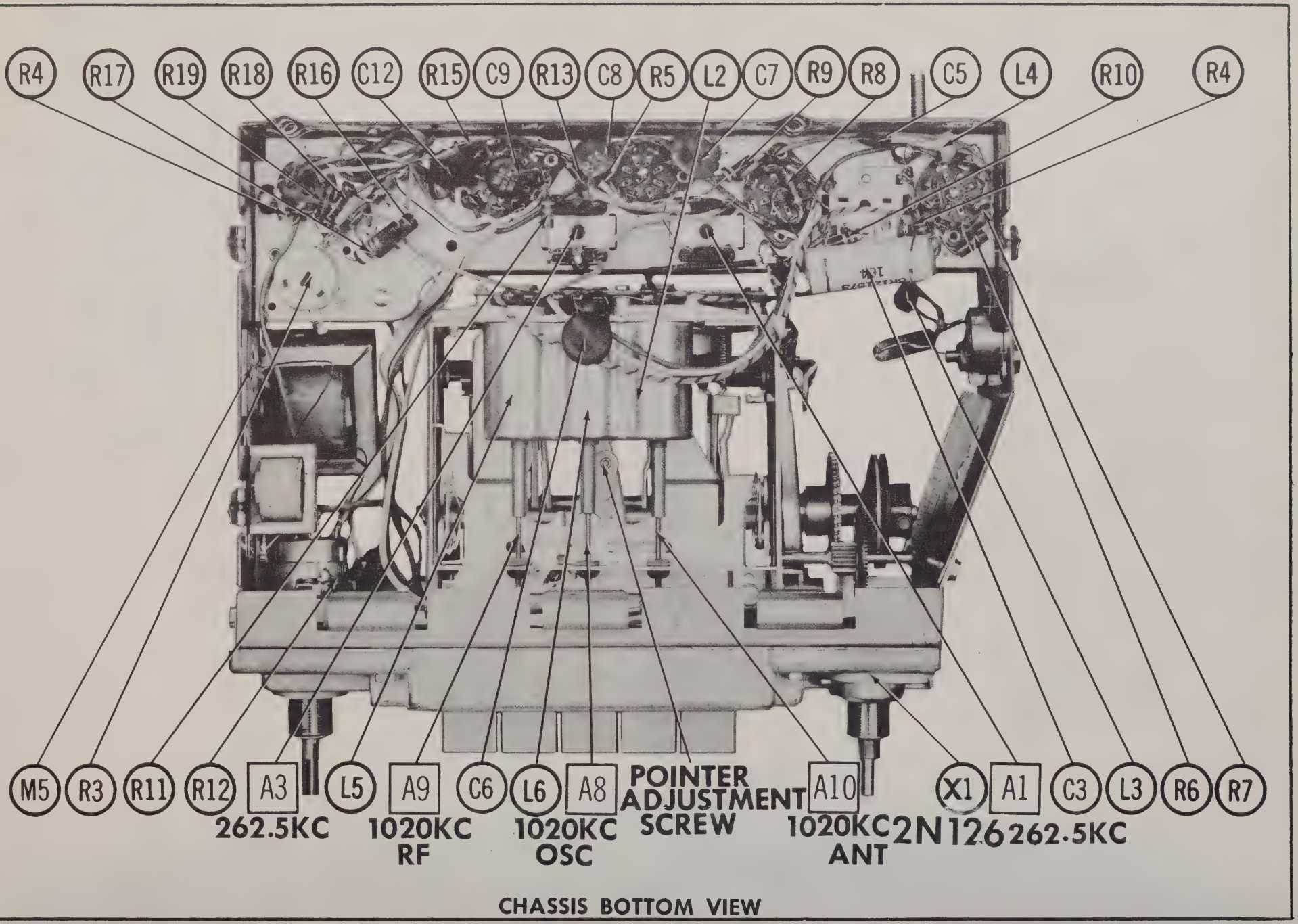
SET 401 FOLDER 8



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	
V4	Det. - AVC - AF Amp.	12DL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N176	Output	CBS2N155	2N301			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■400	16	23B542329	AFH3-00-90	B0045 / BBR100-15	WP300.5			R2634 *
B	100	16							
C	▲100	16							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	20-180		20B534809						
C3	.1	200	8R121573	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C4A	50-260		20B542372						
B	47								
C	120-210								N150 10% N220 5%
C5	18		21R120578						
C6	100		21R124032						
C7	10000		21R482726	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C8	100		21R400537	N750-DI 100	TCN-100	C10T1U	NT-531	5TCU-T1	N750
C9	100		21R400537	N750-DI 100	TCN-100	C10T1U	NT-531	5TCU-T1	N750
C10	3300		21R120422	BPD-0033	DD-332	BYA10D33	UC-5233	5HK-D33	
C11	1000		21R410127	BPD-001	DD-102	BYA10D1M	DC521	5HK-D1	
C12	5000		21R115312	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4meg	½	18B541819	F1-82	RTV-616C		■	Tone
B	1meg	½		R2-56 KB-7 or KR-7*				Volume, Tap ⓐ 600K
C	Switch							Power On-Off
R2	1000Ω	1	18K732740		39-100		FL-1K	Sensitivity
R3	200Ω	1.5	18K540718		39-150			Bias (Wire wound)

■ "STA-LOC" Equivalent : FB46L, OS1500, RU16T55, IS2000, US-42
* Use KR on CRL "red label" controls & KB on "blue label" controls

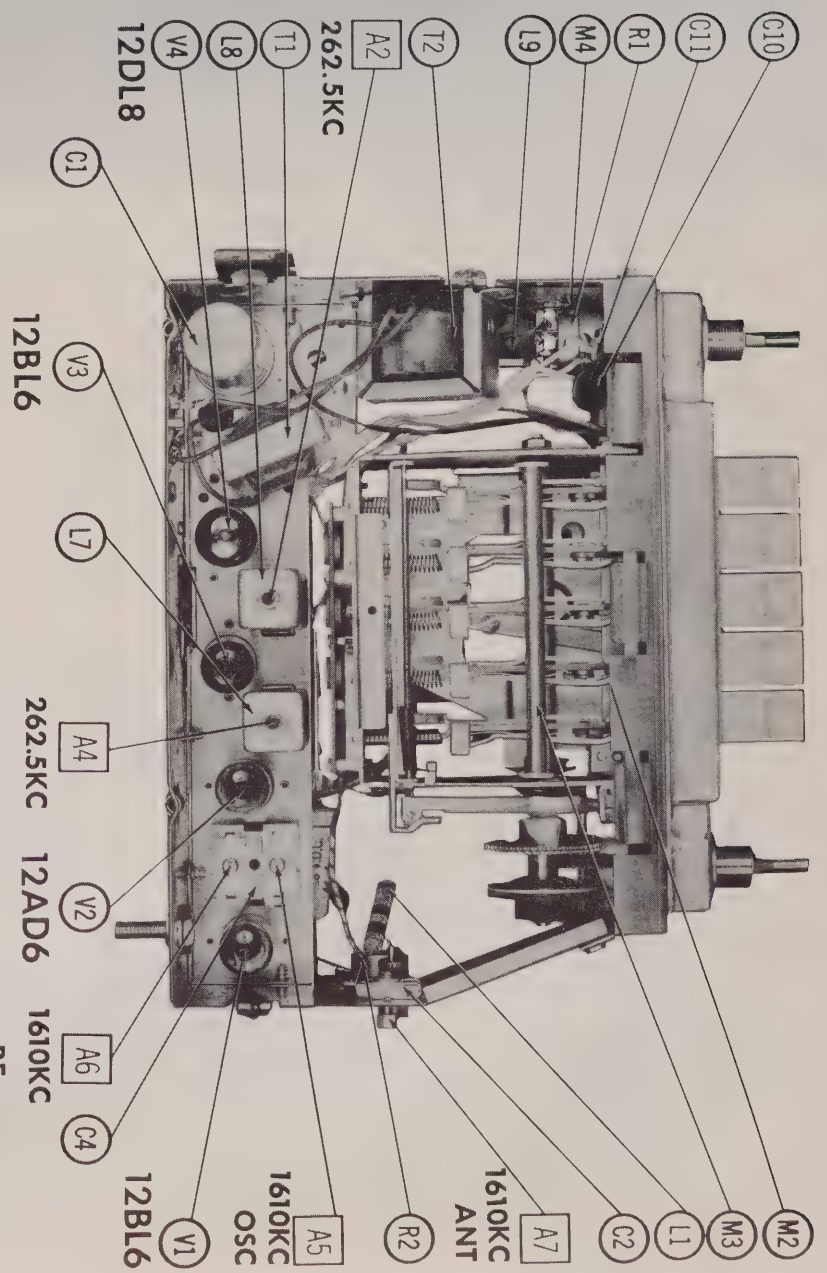
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R4	3.3meg		6K119407	
R5	1.5meg		6R6460	
R6	15meg		6R476065	
R7	4700Ω		6R6039	
R8	1.5meg		6R6460	
R9	3.3meg		6K119407	
R10	33K		6K121704	
R11	47K		6K121687	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R12	68K		6R6001	
R13	12meg		6R400334	
R14	33Ω		6K121304	
R15	10meg		6K119408	
R16	5.6Ω		17K739323	
R17	.47Ω		17K488266	
R18	10Ω Cold		6K540634	
R19	100Ω		6K119402	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.3:	1	25C542375							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	22Ω Tap @ 3.5Ω	25K542236							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	6" X 9"	PM	3-4Ω	50D538018	69A3	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	24K791446	19-1005	BC-566	4612		10 Microhenries; IRC Part #CL-1 (Note 1)
L2	Ant. Coil	24C536308 *					
L3	RF Choke	24K539955					Includes 27mmf Cap.
L4	IF Trap Coil	24K539616	19-3125	TV-195			133 Microhenries
L5	RF Coil	24C536308 *					
L6	Osc. Coil	24C536300 *					
L7	Input IF	24K560418	16-6752	BC-350	12-H1	RF-3	
L8	Output IF	24B542371					

Note 1. Used in Model 84MF only.

* Part of Tuner M3.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	1.3A	.4Ω	.0021 Hy.	25K542423						

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	1AG	5A 32V	65R122345		301005. (1AG 5A 32V)	155004	AGA5	HAF

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Dial Lamp	65R533821	#1891
M3	Tuner	77E541940	AT-221, Complete, Model 84MF
	Tuner	77K560557	AT-242, Model 74MF
M4	Spark Plate	64A530176	
M5	Spark Plate	48A539147	Selenium, use #43A539259 Bushing, #5K124633 Eyelet, #4A540423 Mounting Washer
	Spark Plate	48K539953	Selenium, use #43A539954 Bushing, #5K124848 Eyelet, #4A542137 Mounting Washer

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

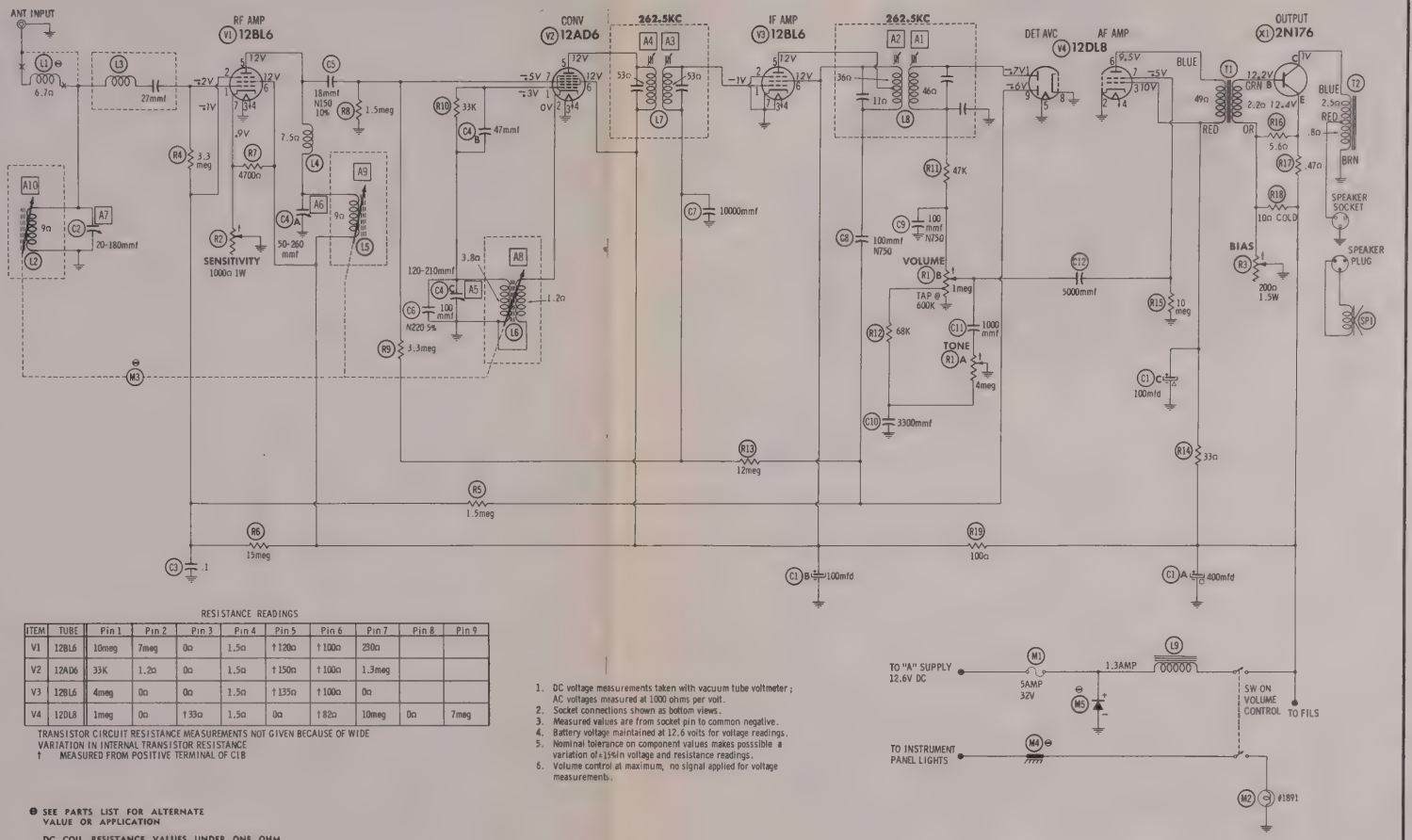
NAME	PART NO.	DESCRIPTION
Knob	36K541850	Volume and Tuning, Model 84MF
Knob	36B539476	Tone and Dummy, Model 84MF
Knob	36B539472	Volume and Tuning, Model 74MF
Knob	36B539476	Tone and Dummy, Model 74MF
Pushbutton	38B538979	Black, Model 74MF
Pushbutton	38K541832	White, Model 84MF

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Shielded Hook-up Wire ..... Use BELDEN No. 8885

Bonding Strap ..... Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	10meg	7meg	0Ω	1.5Ω	†120Ω	†100Ω	230Ω		
V2	12AD6	33K	1.2Ω	0Ω	1.5Ω	†150Ω	†100Ω	1.3meg		
V3	12BL6	4meg	0Ω	0Ω	1.5Ω	†135Ω	†100Ω	0Ω		
V4	12DL8	1meg	0Ω	†33Ω	1.5Ω	0Ω	†82Ω	10meg	0Ω	7meg

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM POSITIVE TERMINAL OF C1B

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Ⓔ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GRUNDIG MAJESTIC MODEL 9078

GRUNDIG MAJESTIC
MODEL 9078

TRADE NAME	Grundig Majestic Model 9078		
SUPPLIER	Majestic International Sales Corp., 743 W. LaSalle St., Chicago 10, Illinois		
TYPE SET	AC Operated FM-BC-SW Receiver With 4 Speed Automatic Record Changer and Tape Recorder		
TUBES	Eleven		
POWER SUPPLY	110/220 Volts AC-60 Cycles	RATING	.7A @ 117 Volts AC (72 Watts Less Motors)
TUNING RANGES	BROADCAST 510-1620KC FREQ. MOD. 88-108MC	SHORT WAVE I 3.2-8.5MC SHORT WAVE II 8.5-18.5MC	

RECORD CHANGER—PERPETUUM—EBNER MODEL REX DELUXE

GRUNDIG MAJESTIC
MODEL 9078

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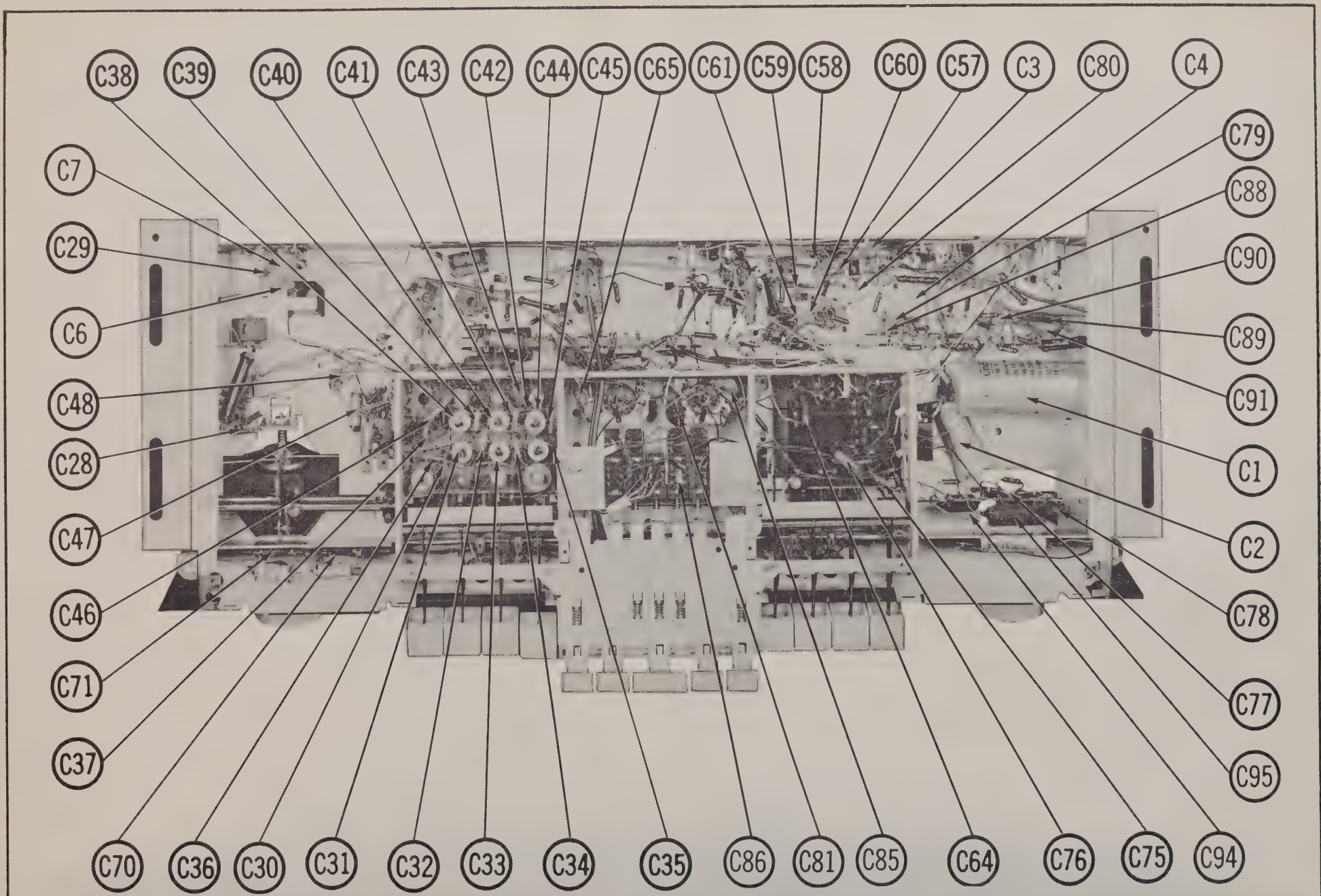
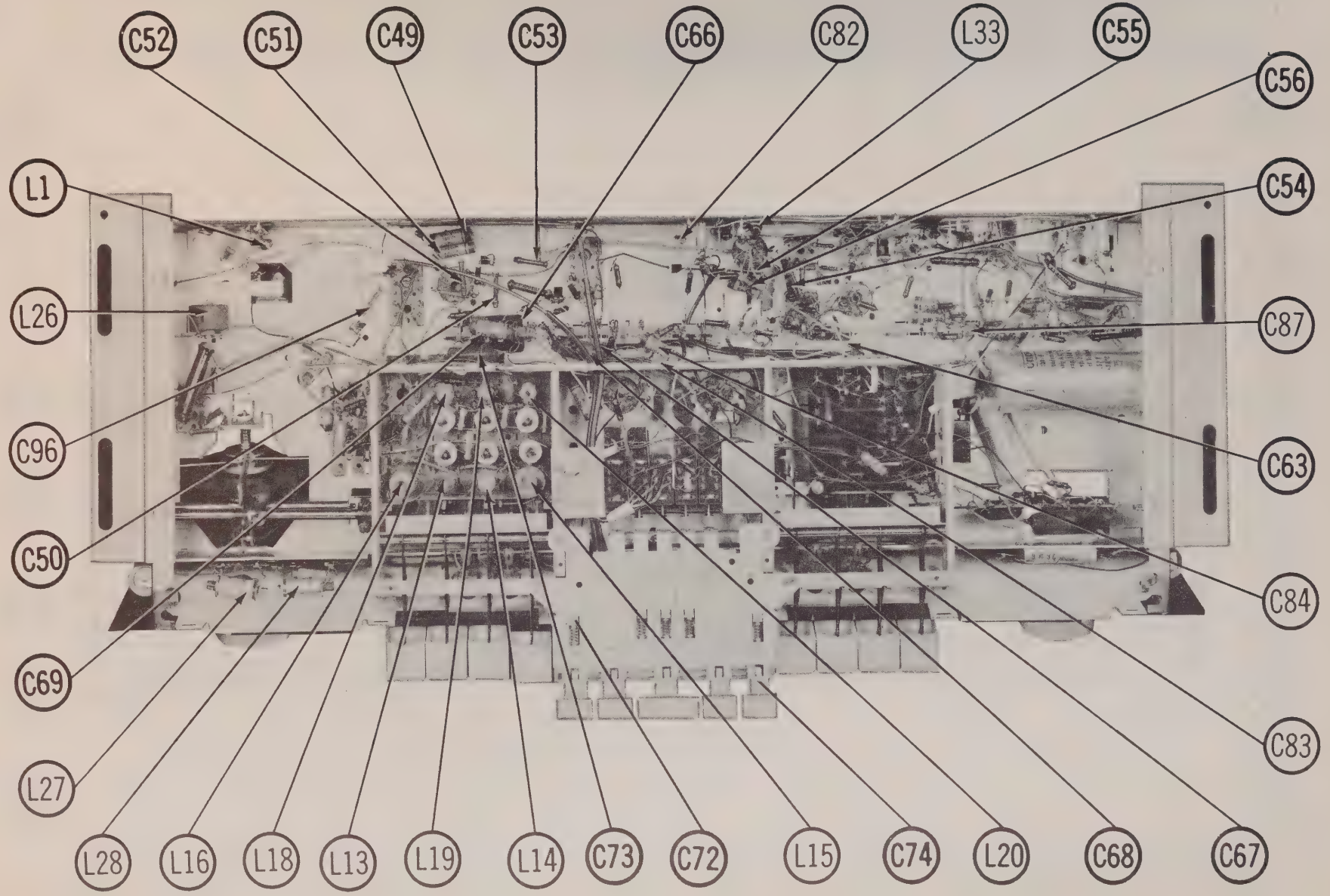
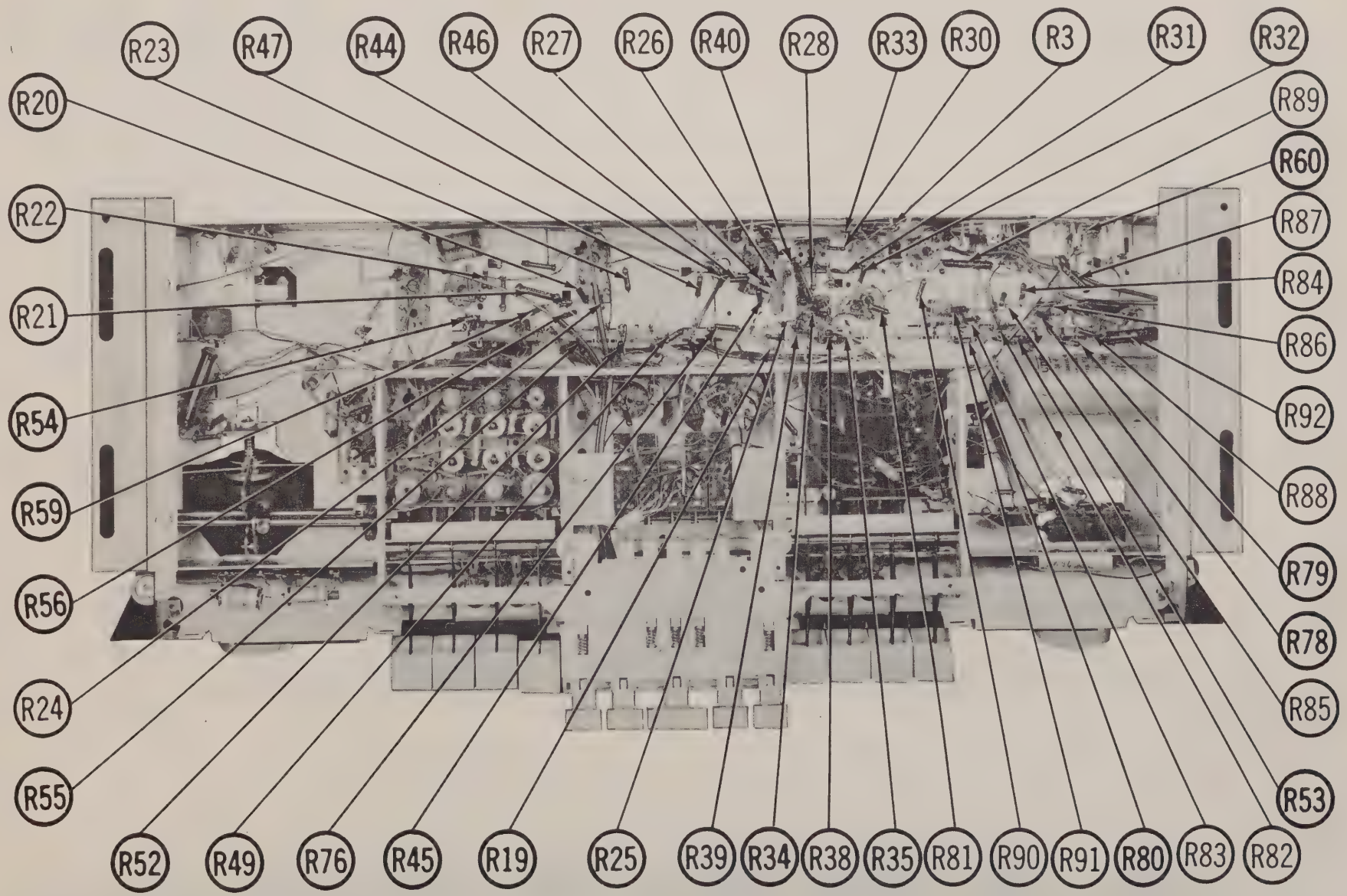


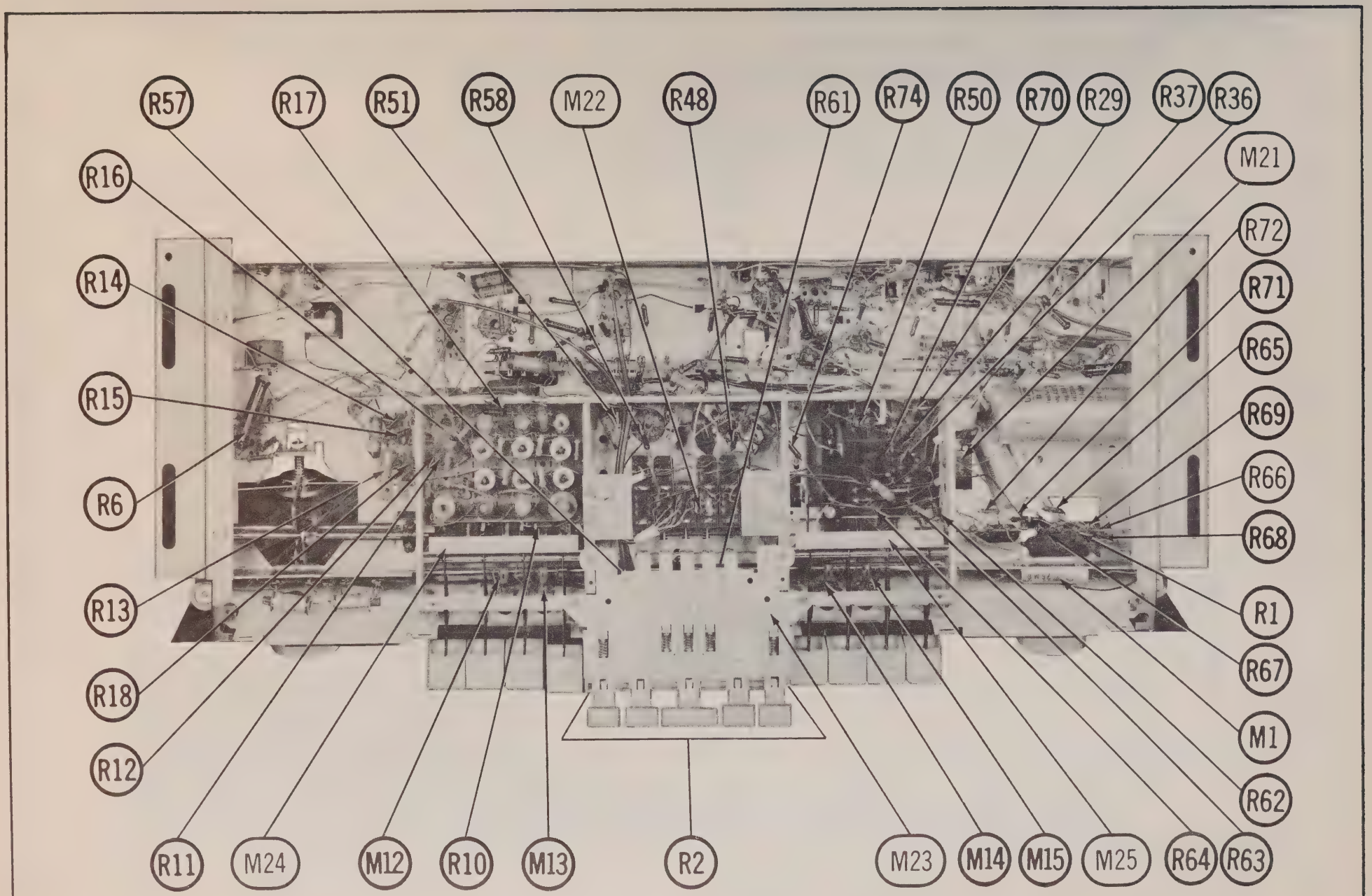
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



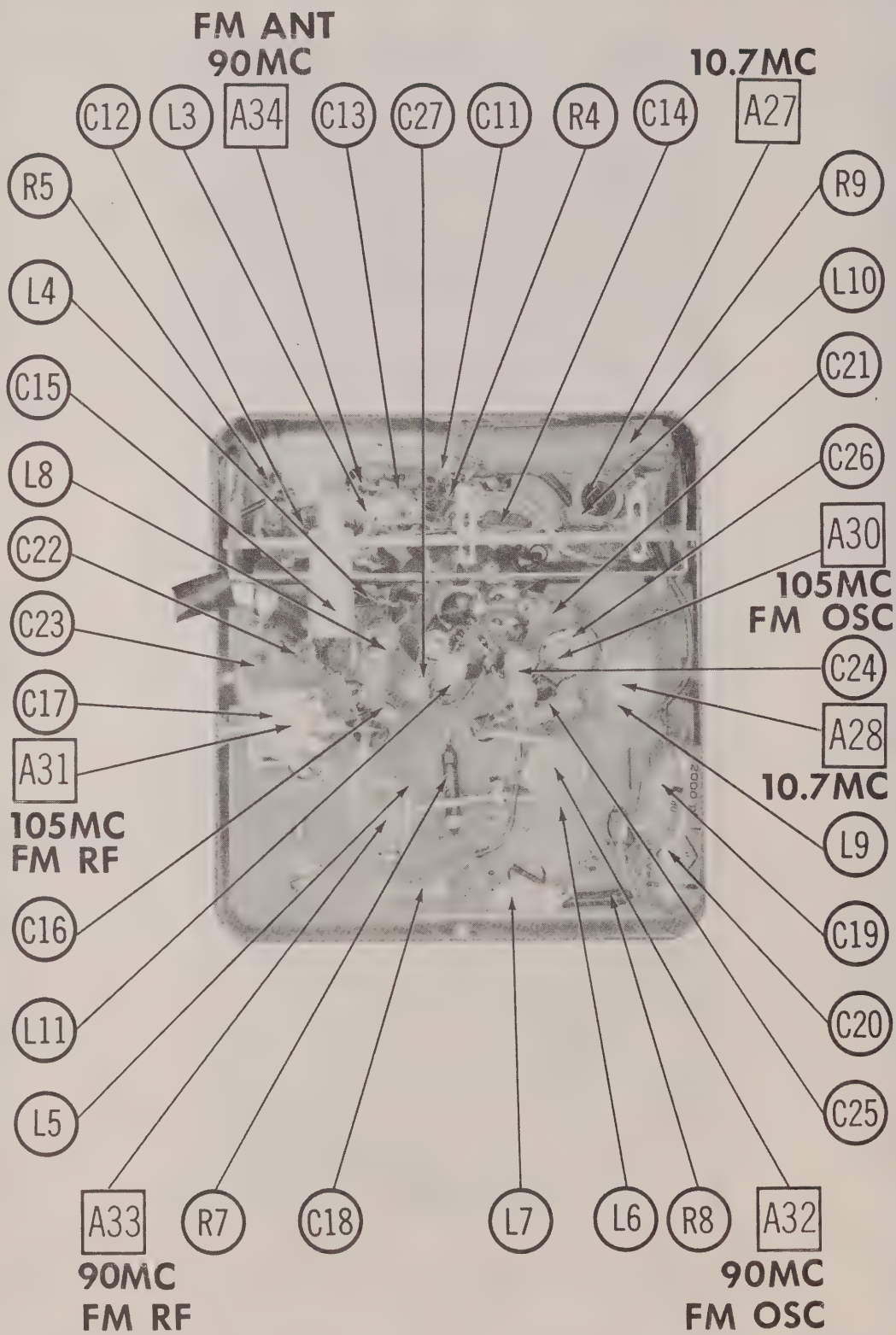
CHASSIS BOTTOM VIEW—CAPACITOR & INDUCTOR IDENTIFICATION



CHASSIS BOTTOM VIEW—RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW—RESISTOR & MISCELLANEOUS IDENTIFICATION



FM RF SUB CHASSIS

REMOTE BATON SOCKET

SPEAKER CROSSOVER NETWORK

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 2 (grid) of 6AJ8/ECH81 (V2). Low side to chassis.	460KC (400∿ Mod)	BC (Sharp)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	200mmf	High side to AM Ant. socket. Low side to chassis.	"	"	"	"	A7	Adjust for MINIMUM deflection.
3.	"	"	1600KC	"	1600KC	"	A8	Adjust for maximum deflection.
4.	"	"	600KC	"	600KC	"	A9	"
5.	"	"	1400KC	"	1400KC	"	A10	"
6.	"	"	600KC	"	600KC	"	A11	Adjust for maximum deflection. Repeat steps 3, 4, 5 and 6.
7.	200mmf	High side to AM Ant. term. Low side to chassis.	8MC (400∿ Mod)	SWI	8MC	"	A12	Adjust for maximum deflection.
8.	"	"	3.5MC	"	3.5MC	"	A13	"
9.	"	"	8MC	"	8MC	"	A14	"
10.	"	"	3.5MC	"	3.5MC	"	A15	Adjust for maximum deflection. Repeat steps 7, 8, 9 and 10.
11.	"	"	18MC	SWII	18MC	"	A16	"
12.	"	"	8.5MC	"	8.5MC	"	A17	"
13.	"	"	18MC	"	18MC	"	A18	"
14.	"	"	8.5MC	"	8.5MC	"	A19	Adjust for maximum deflection. Repeat steps 11, 12, 13 and 14.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
15.	200mmf	High side to pin 7 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A20, A21, A22, A23, A24, A25, A26, A27, A28	Adjust for maximum deflection.
16.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A29	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
15.	200mmf	High side to pin 7 (grid) of 6AQ8/ECC85 (V1). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A20, A21, A22, A23, A24, A25, A26, A27, A28	Disconnect stabilizing Capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
16.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Common to chassis.	A29	Reconnect Capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A20 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
17.	270Ω Carbon Resistor	Across FM Antenna terminals.	105MC	FM	105MC	DC probe to point Ⓐ. Common to chassis.	A30, A31	Adjust for maximum deflection.
18.	"	"	90MC	"	90MC	"	A32, A33, A34	"

FIG. 1

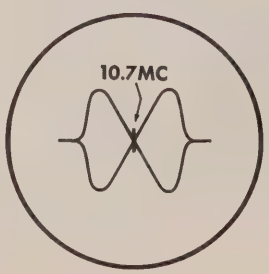
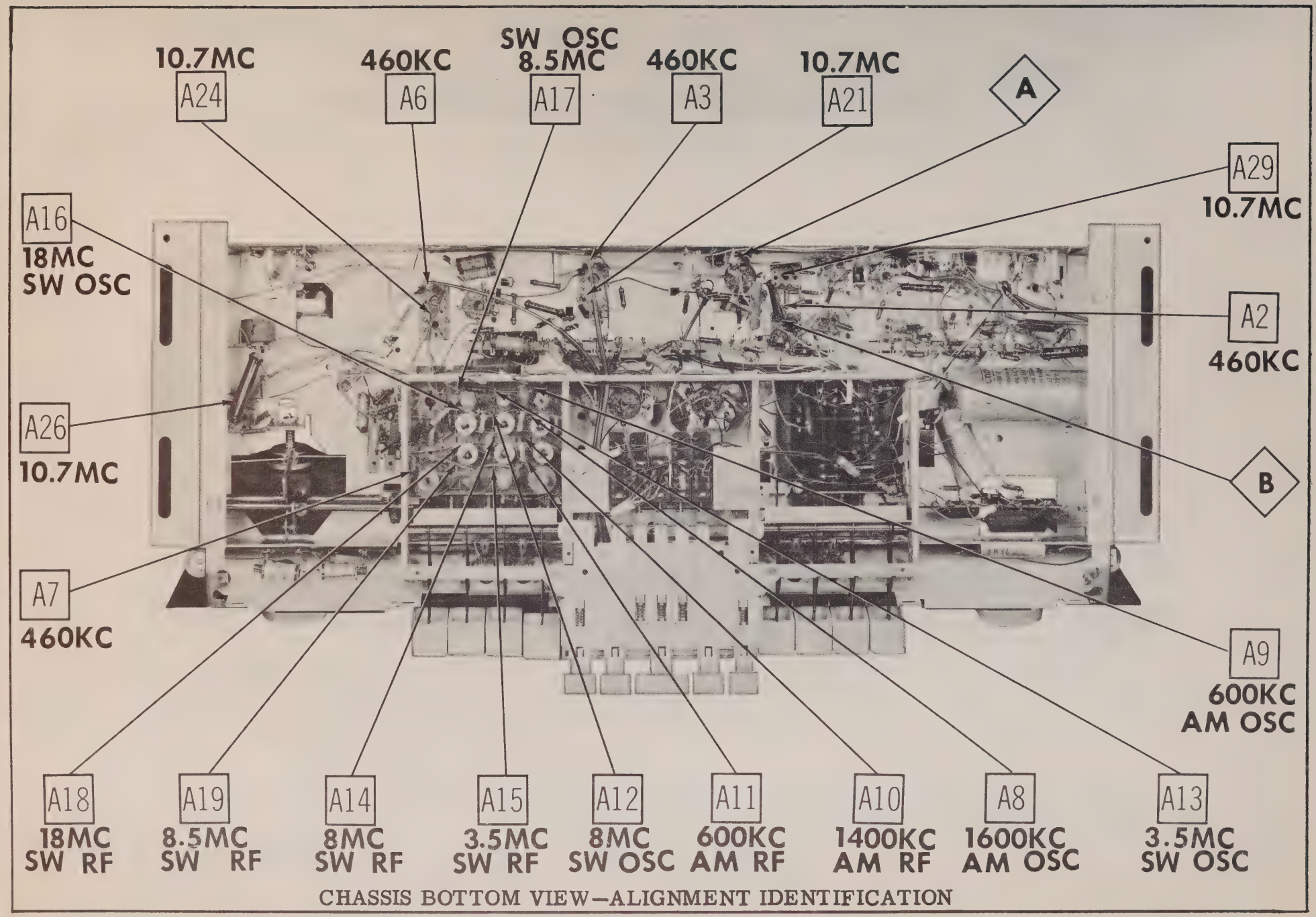
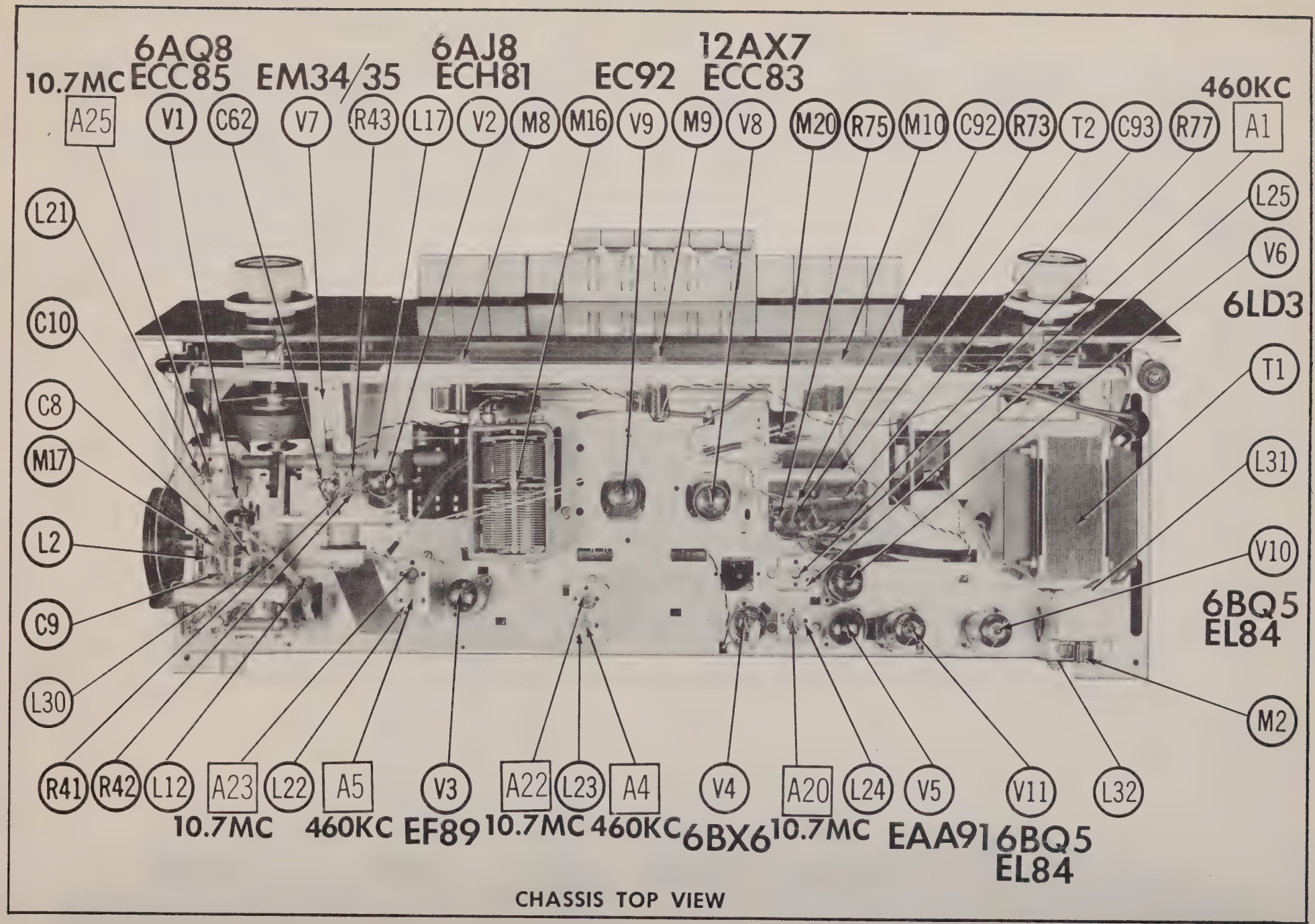


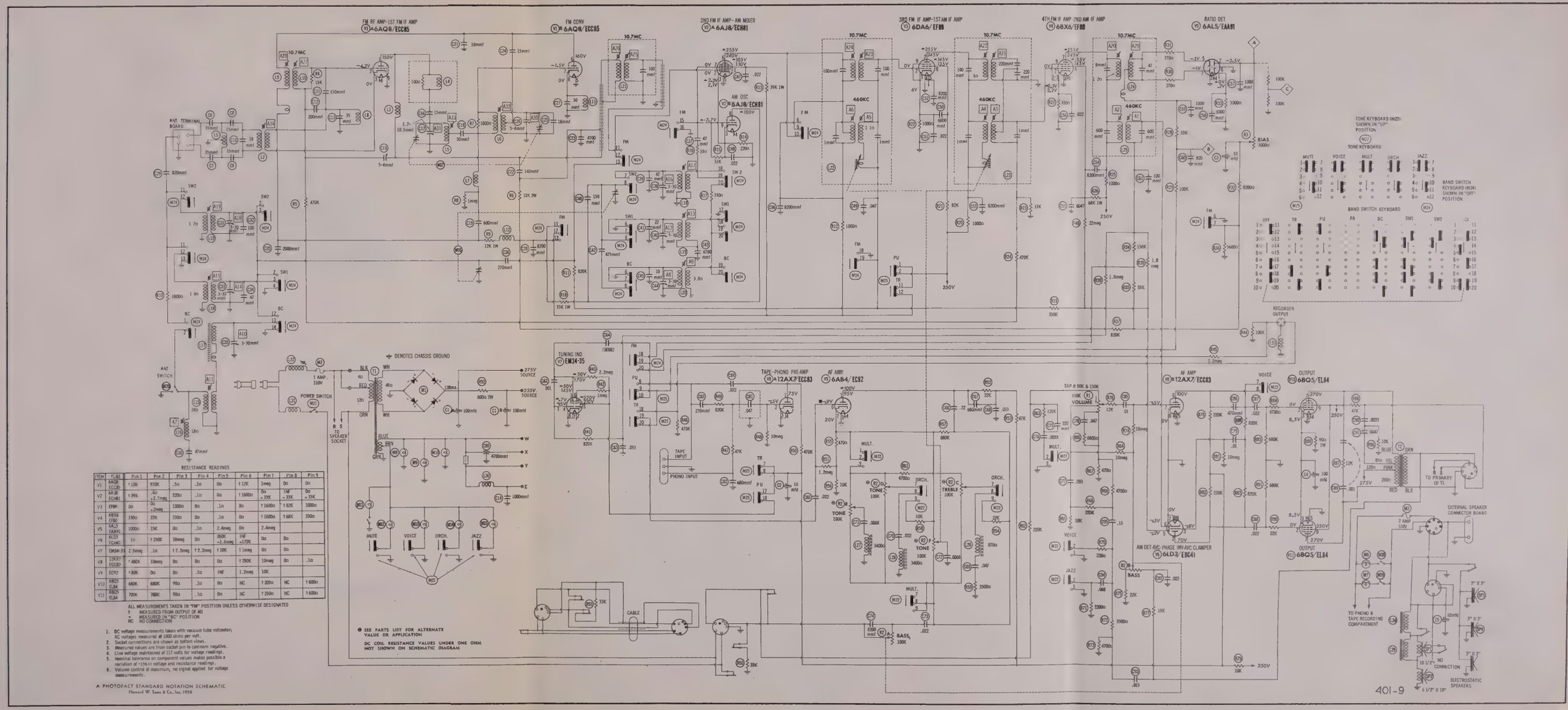
FIG. 2



CHASSIS BOTTOM VIEW—ALIGNMENT IDENTIFICATION



CHASSIS TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8 ECC85	↑10K	970K	.5Ω	.1Ω	0Ω	↑12K	1meg	0Ω	0Ω
V2	6AJ8 ECH81	↑39K	.4Ω =2.7meg	220Ω	.1Ω	0Ω	↑1600Ω	0Ω =39K	INF =39K	0Ω =39K
V3	EF98	0Ω	0Ω =2meg	1000Ω	0Ω	.1Ω	0Ω	↑1600Ω	↑82K	1000Ω
V4	6BX6 EF80	330Ω	33K	330Ω	0Ω	.1Ω	0Ω	↑1600Ω	↑68K	330Ω
V5	6AL5 EAA91	1000Ω	15K	0Ω	.1Ω	2.4meg	0Ω	2.4meg		
V6	6LD3 EBC41	1Ω	↑250K	10meg	0Ω	260K =1.6meg	INF =170K	0Ω	0Ω	
V7	EM34-35	2.5meg	.1Ω	↑2.2meg	↑2.2meg	↑10K	↑1meg	0Ω	0Ω	
V8	12AX7 ECC83	↑480K	10meg	0Ω	0Ω	0Ω	↑250K	10meg	0Ω	.1Ω
V9	ECH2	↑80K	0Ω	0Ω	.1Ω	INF	1.2meg	10K		
V10	6BQ5 EL84	680K	680K	680K	90Ω	.1Ω	0Ω	NC	↑205Ω	NC ↑600Ω
V11	6BQ5 EL84	700K	700K	700K	90Ω	.1Ω	0Ω	NC	↑250Ω	NC ↑600Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
↑ MEASURED FROM OUTPUT OF M1
= MEASURED IN "NC" POSITION
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
7. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

401-9

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C84	.022	500		P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C85	.01	125		P288N-01	D6-103	CUB4S1	GEM-211	2TM-S1	
C86	470			1468-00047	D6-471	5W5T47	UC-5447	1FM-347	
C87	.022	500		P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C88	.022	500		P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C89	.001	500		P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C90	.0033	500		P688N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C91	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C92	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C93	.015	125		P288N-015	DD16-153	CUB6S15	GEM-4115	4TM-S15	
C94	.068	125		P288N-068		CUB4S68	GEM-6168	6TM-S68	
C95	.15	125		P288N-15		CUB6P15	GEM-4015	4TM-P15	
C96	8200								

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	650K	1/2	7801-189					Volume, Tap ⓐ 50K & 150K
R2A	500K	1/2	7806-152					Bass
B	100K	1/2						Bass
C	100K	1/2						Treble ①
D	100K	1/2						Tone ①
E	100K	1/2						Tone ①
F	100K	1/2						Tone ①
R3	3000Ω	1/4	5175					Bias

① Control open at mid range, 50K each side of center.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Grundig Majestic PART No.	NOTES
	OHMS	WATT		
R4	15K			
R5	470K			
R6	10K	2		
R7	1800Ω			
R8	1meg			
R9	12K	1		
R10	1800Ω			
R11	820K			
R12	1000Ω			
R13	39K	1		
R14	220Ω			
R15	33K			
R16	33Ω			
R17	330Ω			
R18	33K	1		
R19	330K			
R20	1000Ω			
R21	82K			
R22	1000Ω			
R23	33K			
R24	470K			
R25	1000Ω			
R26	68K	1		
R27	330Ω			
R28	33K			
R29	100K			
R30	270Ω			
R31	270Ω			
R32	8200Ω			
R33	1000Ω			
R34	150K			
R35	33K			
R36	5600Ω			
R37	820K			
R38	1.8meg			
R39	1.8meg			
R40	22meg			
R41	820K			
R42	1meg			
R43	2.2meg			
R44	100K			
R45	2.2meg			
R46	470K			
R47	47K			
R48	10meg			
R49	820K			
R50	470K			
R51	1.2meg			
R52	22K			
R53	47K			
R54	22K			
R55	470Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING		Grundig-Majestic PART No.	NOTES
	OHMS	WATT		
R56	10K			
R57	680K			
R58	10K			
R59	3300Ω			
R60	33K			
R61	4700Ω			
R62	220K			
R63	120K			
R64	10meg			
R65	10K			
R66	6800Ω			
R67	470Ω			
R68	4700Ω			
R69	220K			
R70	220Ω			
R71	2200Ω			
R72	3300Ω			
R73	4700Ω			
R74	10meg			
R75	22K			
R76	12K			
R77	15K			
R78	220K			
R79	10K			
R80	820K			
R81	10meg			
R82	220K			
R83	820K			
R84	4700Ω			
R85	680K			
R86	10K			
R87	12K			
R88	47K			
R89	90Ω	1		
R90	22K			
R91	680K			
R92	600Ω	2		
R93	33K			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	220V ⓐ .35A Tap ⓐ 110V ⓐ .7A	210V ⓐ .125A	5V ⓐ .5A	9096-006						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 4.8A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6500Ω	7Ω	BV9066-049							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Grundig Majestic PART No.	QUAM PART No.	
SP1	10½"	PM	5Ω	7003-002		
SP2	6½"X10"	PM	2-3Ω	7045-001		
SP3	3" X 3"	Electrostatic		7082-002		
SP4	3" X 3"	Electrostatic		7082-002		
SP5	3" X 3"	Electrostatic		7082-002		

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					
		Grundig Majestic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil	9238-038					
L2	FM Ant. Trans	HFBV1974/I					
L3	RF Choke	HFBV1976/I					
L4	RF Choke	HFBV1956/I					Wound on 100Ω Resistor
L5	FM RF Coil	9208-005					
L6	FM Osc. Coil	9208-065					
L7	RF Choke	HFBV1975/I					
L8	RF Choke	HFBV1976/I					
L9	1st FM IF Pri.	HFBV1977/I					
L10	1st FM IF Sec.	9208-064					
L11	Cathode Choke	HFBV1950/I					
L12	RF Choke	9238-022					
L13	AM Ant. Trans	9232-011					
L14	AM Ant. Trans	9231-016					
L15	AM Ant. Trans	9208-059					
L16	IF Trap	9208-055					
L17	Loop Stick	9233-003					
L18	AM Osc. Coil	9232-008					
L19	AM Osc. Coil	9231-017					
L20	AM Osc. Coil	HFBV1681					
L21	2nd FM IF	7206-209					
L22	3rd FM IF 1st AM IF Pri. 1st AM IF Sec. 1st AM IF Coupling Coil	7207-310					
L23	4th FM IF 2nd AM IF	7207-311					
L24	Ratio Det.	7206-207					
L25	3rd AM IF	7206-107					
L26	Tone Choke	9227-006					
L27	Tone Choke	9217-015					
L28	Tone Choke	9217-015					
L29	Tone Choke	9217-008					
L30	Fil. Choke	9238-012					
L31	Line Choke	9227-004					
L32	Line Choke	9227-005					
L33	RF Choke	HFBV2149/I					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L34		.6Ω CT	1.5 Mh. CT	9030-002						

RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Grundig Majestic PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.115A	B250C125 ①		60-9150 ①②	D-64 ③	① Selenium Type. ② Two required. ③ Silicon Type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Grundig Majestic PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	Slo-Blo	1A 110V		9625-057 NR. 101			AGX1	
M3	Slo-Blo	2A 110V						

PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Grundig Majestic PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M4						

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Grundig Majestic PART No.	JENSEN PART No.	WALCO PART No.	
M5		♦ RX-552D and ♦ RX-552LPD		♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M6	Pilot Lamp		110V 15W, Record Player Compartment
M7	Pilot Lamp		110V 15W, Tape Recorder Compartment
M8	Pilot Lamp		7V .3A
M9	Pilot Lamp		7V .3A
M10	Pilot Lamp		7V .3A
M11	Pilot Lamp		6V .1A, Ferrite Antenna Indication
M12	Pilot Lamp		6V .1A, Tone Control Board Indication
M13	Pilot Lamp		6V .1A, Tone Control Board Indication
M14	Pilot Lamp		6V .1A, Tone Control Board Indication
M15	Pilot Lamp		6V .1A, Tone Control Board Indication
M16	Tuning Cap.	1005-022	AM (Ant. 9-550mmf, Osc. 13-465mmf)
M17	Tuning Cap.	9653-601	FM, 2 Gang
M18	Switch		Tape Recorder Compartment, Pilot Lamp
M19	Switch		Record Player Compartment, Pilot Lamp
M20	Switch	1024-019	FA Antenna (Toggle Type)
M21	Switch	7404-548	Power On-Off (Toggle Type)
M22	Keyboard	7612-018	Tone Control Contact
M23	Keyboard	7612-021	Pressbutton Device For Tone Control
M24	Keyboard		Bandswitch
M25	Keyboard		Off, TR, PU, FA

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	9616-532	Tuning
Knob	9616-534	FA, Antenna Tuning
Knob	9616-536	Volume
Cabinet	2054-111	
Dial Scale	2054-115	
Pointer	1035-098	AM Dial
Pointer	1032-073	FM Dial

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amplifier - 1st FM IF Amp. -FM Conv.	6AQ8/ECC85
V2	2nd FM IF Amp. - AM Mixer - AM Osc.	6AJ8/ECH81
V3	3rd FM - 1st AM IF Amp.	6DA6/EF89
V4	4th FM - 2nd AM IF Amp.	6BX6/EF80
V5	Ratio Detector	6AL5/EAA91

ITEM No.	USE	TYPE
V6	AM Det. - AVC Clamper - Phase Inverter	6LD3/EBC41
V7	Tuning Indicator	EM34-35
V8	Tape Phono Preamp. - AF Amplifier	12AX7/ECC83
V9	AF Amplifier	6AB4/EC92
V10	Output	6BQ5/EL84
V11	Output	6BQ5/EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	100	385			B0332			D-198	R2606 *
B	100	385						MT-4580	
C2	16	385		PRS450V16	BR1645	TC74	TD-16-450	MT-4516	TVA-1708
C3	10	80		PRS150V10	BBR10-150	TC42	TD-10-150	MT-1510	TVA-1406
C4	100	15		PRS15V100	BBR100-15	TC2501	TD-100-15	MTH-1510	TVA-1160
C5	10	40	0820-150	PRS50V10	BBR10-50	TC32	TD-10-50	MT-0510	TVA-1304

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	35								
C7	35			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C8	15			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C9	15			SI 18	D6-180	LT6Q18	UC-5418	5GA-Q18	
C10	18			SI 150	D6-151	LT6T15	UC-5315	5GA-T15	
C11	150			1468-0002	D6-201	5W5T2	UC-532	1FM-32	
C12	200								
C13	35			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C14	1000								
C15	.5-4			DI-000015	DD-150	L10Q15	UC-5415	5GA-Q15	
C16	15								
C17	1.7-10.5			SI 30	D6-300	LT6Q3	UC-543	5GA-Q3	
C18	30								
C19	600			1467-002	D6-202	1W5D2	UC-522	1FM-22	
C20	2000			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C21	10								
C22	140			SI 4700	D6-472	LT6D47	UC-5247	5GA-D47	
C23	4700			SI 15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C24	15			SI 18	D6-180	LT6Q18	UC-5418	5GA-Q18	
C25	18								
C26	.5-4			SI 30	D6-300	LT6Q3	UC-543	5GA-Q3	
C27	30								

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

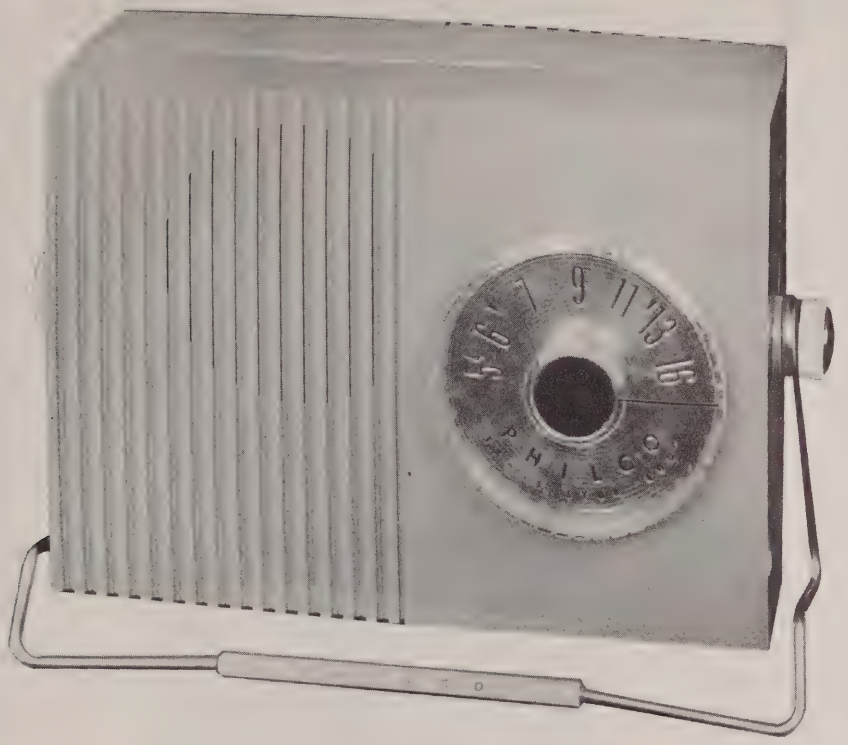
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C28	8200								
C29	820			1467-00082	D6-821	1W5T82		1FM-382	
C30	47			1468-000047	D6-470	5W5Q47	UC-5447	1FM-447	
C31	3-30								
C32	100			SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C33	3-30								
C34	47			SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C35	3-30								
C36	270			1467-00027	D6-271	5W5T27	UC-5327	1FM-327	
C37	47			1467-000047	D6-470	5W5Q47	UC-5447	1FM-447	
C38	3-30								
C39	47			SI 47	D6-470	LT6Q47	UC-5447	5GA-Q47	
C40	3-30								
C41	22			SI 22	D6-220	LT6Q22	UC-5422	5GA-A22	
C42	475								
C43	4700			1468-0047	D6-472	1W5D47	UC-5247	1FM-247	
C44	3-30								
C45	10			SI 10	D6-100	LT6Q1	UC-541	5GA-Q1	
C46	150			SI 150	D6-151	LT6T15	UC-5315	5GA-T15	
C47	.022	500		P688N-022	DD-203	CUB6S22	GEM-6122	6TM-S22	
C48	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C49	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C50	6800			SI 6800	D6-682	LT6D68			
C51	.022	125		P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C52	8200								
C53	8200								
C54	8200								
C55	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C56	.022	125		P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C57	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C58	1000			SI 1000	D6-102	LT6D1	UC-521	5GA-D1	
C59	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C60	820			1467-00082	D6-821	1W5T82		1FM-382	
C61	100			1468-0001	D6-101	5W5T1	UC-531	1FM-31	
C62	.001	500		P688N-001	D6-102	CUB6D1	GEM-621	6TM-D1	
C63	.033	125		P288N-033		CUB6S33	GEM-4133	4TM-S33	
C64	.00082	500			D6-821	LT6T82		5GA-T82	
C65	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C66	.22	500		P688N-22		CUB6P22	GEM-6022	6TM-P22	
C67	680			1467-00068	D6-681	1W5T68	UC-5368	5GA-T68	
C68	.033	500		P688N-033	DF-303	CUB6S33	GEM-6133	6TM-S33	
C69	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C70	.022	125		P288N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C71	.0068	125		P288N-0068	D6-682	CUB6D68	GEM-6268	6TM-D68	
C72	.0068	125		P288N-0068	D6-682	CUB6D68	GEM-6268	6TM-D68	
C73	.022	125		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C74	8200								
C75	220			1468-00022	D6-221	5W5T22	UC-5322	1FM-322	
C76	.0033	125		P288N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C77	.033	125		P288N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C78	.047	125		P288N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C79	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C80	4700			SI 4700	D6-472	LT6D47	UC-5247	5GA-D47	
C81	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C82	680			1467-00068	D6-681	1W5T68	UC-5368	1FM-368	
C83	270			1468-00027	D6-271	5W5T27	UC-5327	1FM-327	

PHOTOFACT* Folder

*TRADE MARK

PHILCO MODELS
T-700, T-800 (Code 124, 126)

PHILCO MODELS
T-700, T-800 (Code 124, 126)



TRADE NAME	Philco Models T-700, T-800 (Codes 124, 126)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Portable AM Transistorized Receiver

POWER SUPPLY 6 Volts DC RATING 13MA@ 6 Volts DC
TUNING RANGE—BROADCAST 535KC to 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to ant. stator on tuning gang. Low side to chassis,	455KC (400~ Mod.)	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4,	Adjust for maximum deflection.
2.		Loop	1620KC	1620KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output
3.		"	600KC	600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.
4.		"	1400KC	1400KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of re - ceiver. Asjust for maximum output. Repeat setps 2 thru 4.

Harmonic whistle, when encountered, may be reduced by bending C11 near R15 and X4.

PHILCO MODELS
T-700, T-800 (Code 124, 126)

SET 401 FOLDER 10

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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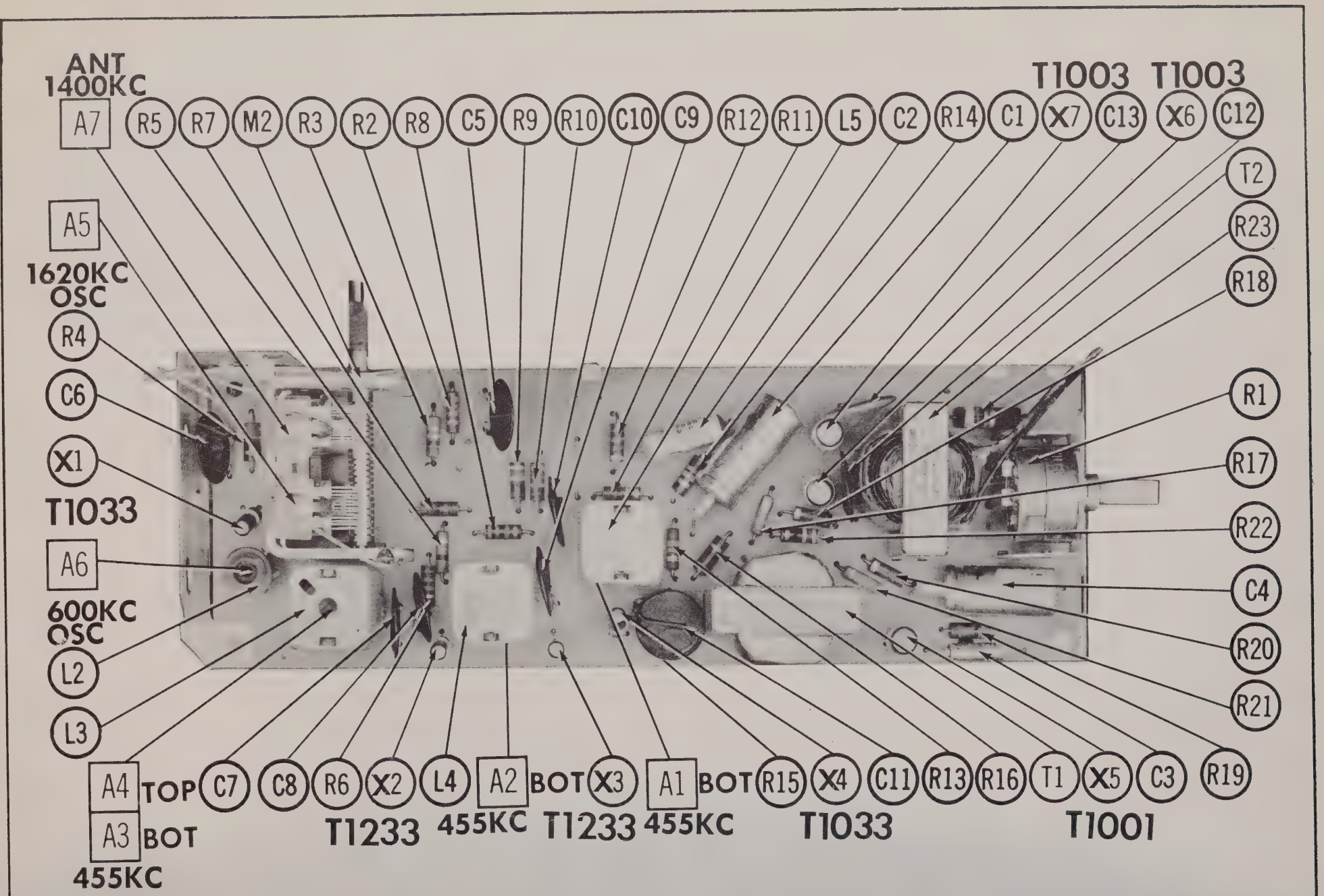


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1033	Converter				
X2	T1233	1st IF Amplifier				
X3	T1232	2nd. IF Amplifier				
X4	T1033	Detector				
X5	T1001	Driver				Note 1
X6	T1003	Output				Note 2
X7	T1003	Output				Note 2

Note 1. Type T1000 used in code 126
Note 2. Some codes 124 chassis use type T1007. Code 126 chassis use type T1008

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	6	30-2588-4	PWE6V100	BBR100-6	TT6X100	ML100-6		TVA-1101
C2	20	6	30-2588-1 ①	PWE6020	NL20-6	TT6X25	ML20-6		TE-1090
C3	1	6	30-2591-5	XPP-6001	NL1-6	TT12X1	ML1-6		TE-1080
C4	100	6	30-2588-4	SRE6V100	BBR100-6	TT6X100	ML100-6		TVA-1101

①Alternate Part #30-2591-3 used in some versions

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C6	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C7	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C8	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C10	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C11	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C12	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C13	10000		30-1262	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	4000Ω	½	33-5575-10					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R2	8200Ω		66-2828340	
R3	15K		66-3158340	
R4	2700Ω		66-2278340	
R5	1000Ω		66-2108340	
R6	2200Ω		66-2228340	
R7	1000Ω		66-2108340	
R8	8200Ω		66-2828340	
R9	15K		66-3158340	
R10	2700Ω		66-2278340	
R11	10K		66-3108340	
R12	220Ω		66-1228340	

ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R13	6800Ω		66-2688340	
R14	27K		66-3278340	
R15	330Ω		66-1338340	
R16	82Ω		66-0828340	
R17	1800Ω		66-2188340	
R18	220Ω		66-1228340	
R19	12Ω		66-0128340	
R20	560Ω		66-1568340	
R21	1800Ω 5%		66-2188240	
R22	33Ω 5%		66-0338240	
R23	4.7Ω		66-9478360	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1:	1	32-8813							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	186Ω	3-4Ω	32-8812							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	36-1654-22① 36-1654-20②	4A1	①Used in Model T-800 ②Used in Model T-700

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	32-4668-1					
L2	Osc. Coil	32-4669-2					
L3	1st. IF	32-4738-1					
L4	2nd. IF	32-4738-2					
L5	3rd. IF	32-4738-3					

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V		2R		A100		M-13		2LP		4 Used

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap.	31-2783-6	2-Gang (Ant. 19-214mmf)

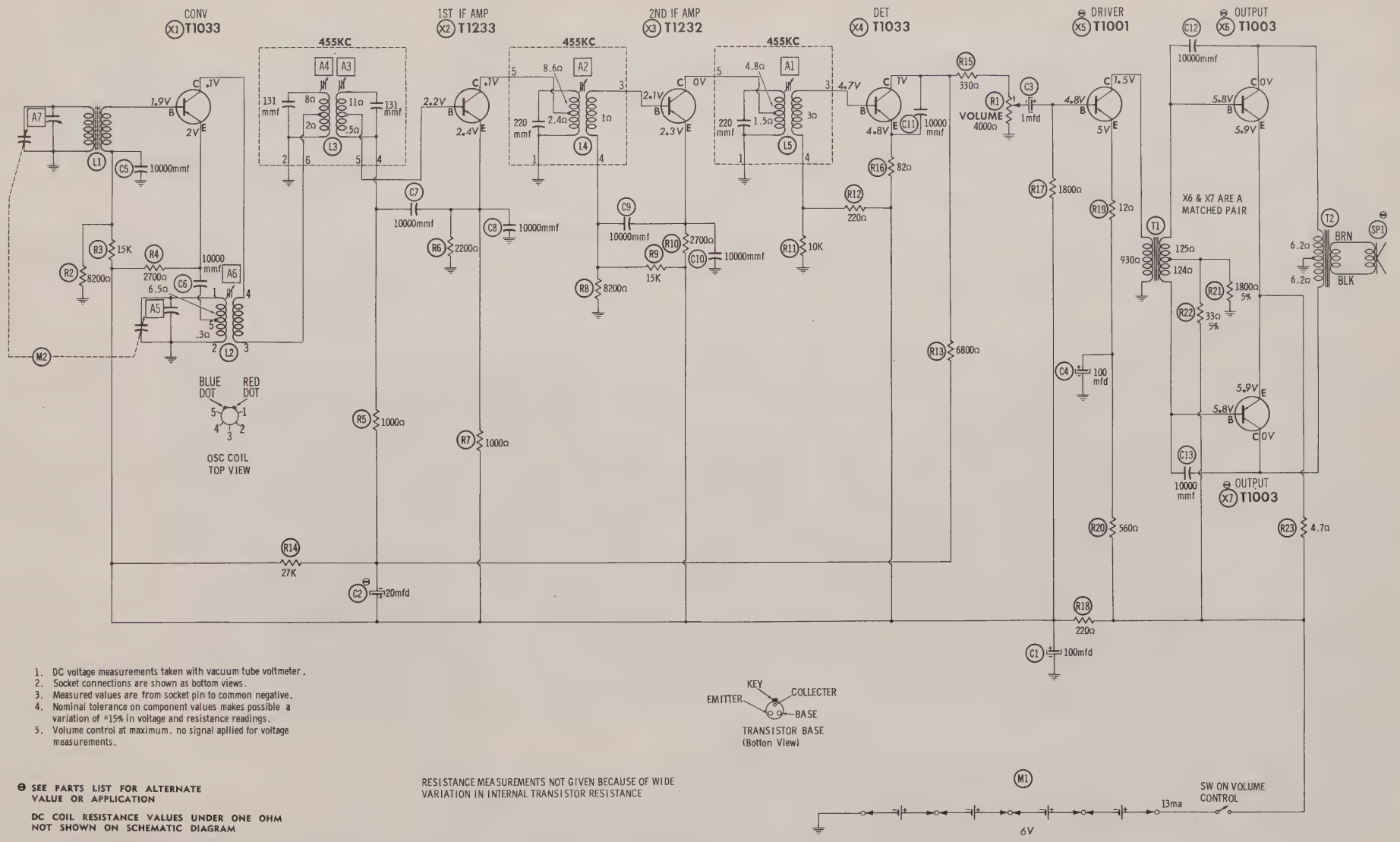
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6282-4	Tuning, Model T-800
Knob	54-6299-9	Volume, Model T-800
Cabinet	11276	Model T-800
Knob	54-6292-3	Tuning, Model T-700
Knob	54-6016-30	Volume, Model T-700
Cabinet	11267	Model T-700

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

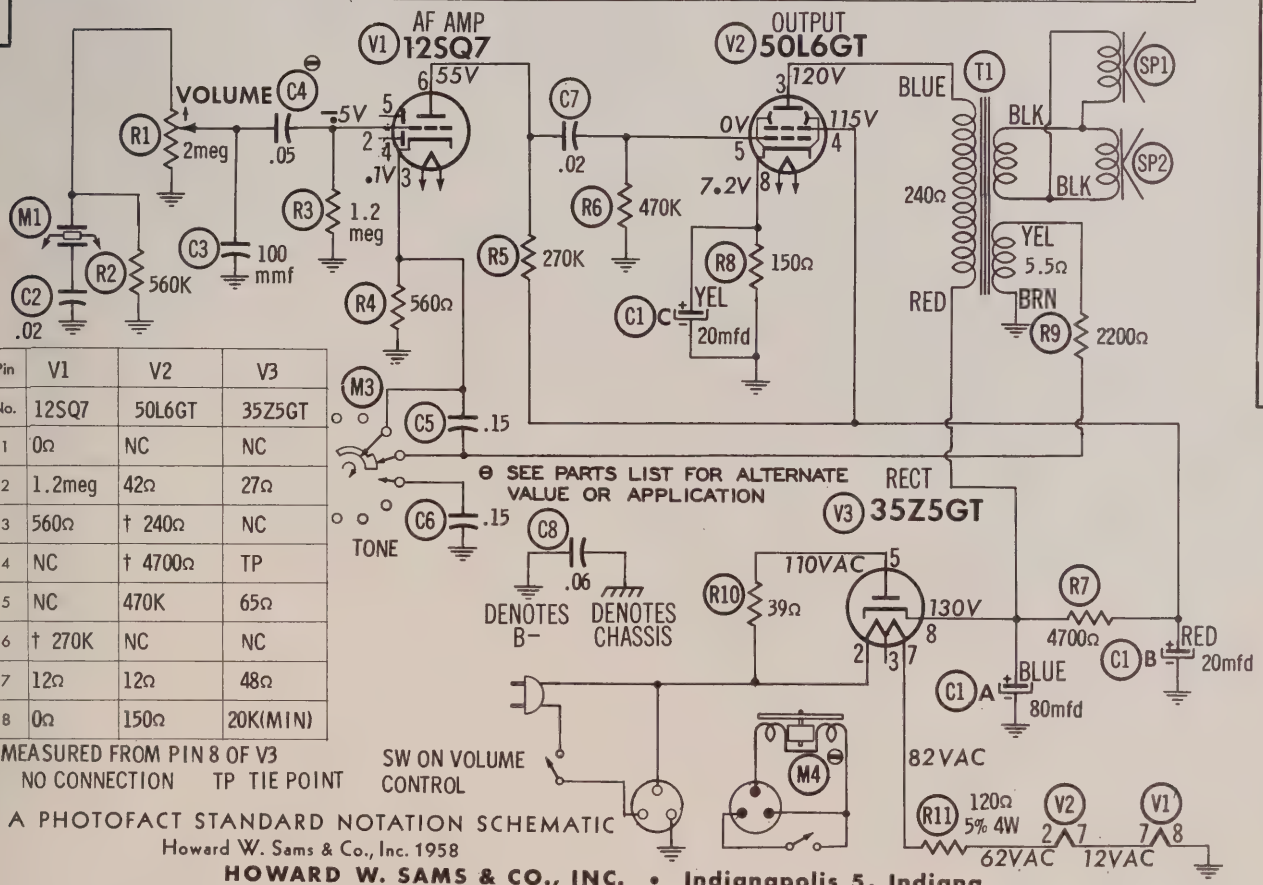
PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PHONOLA MODEL 656

PHONOLA MODEL 656

TRADE NAME	Phonola Model 656
MANUFACTURER	Waters Conley Co., Inc., Rochester, Minn.
TYPE SET	AC Operated Phono Amplifier with 4 Speed Manual Record Player
TUBES (Three)	Types 12SQ7 AF Amplifier, 50L6GT Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles RATING . 26 Amp. @117 Volts AC (27 Watts without Motor)



Pin No.	V1 12SQ7	V2 50L6GT	V3 35Z5GT
1	0Ω	NC	NC
2	1.2meg	42Ω	27Ω
3	560Ω	† 240Ω	NC
4	NC	† 4700Ω	TP
5	NC	470K	65Ω
6	† 270K	NC	NC
7	12Ω	12Ω	48Ω
8	0Ω	150Ω	20K(MIN)

† MEASURED FROM PIN 8 OF V3
NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

Howard W. Sams & Co., Inc. 1958

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SET 401 FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12SQ7	
V2	Output	50L6GT	
V3	Rectifier	35Z5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHONOLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	12145	PRS150/25V 8040/20	BBRT8415C	TCT3117	CDB-T-1002	FMT-333	R2318 *
B	20	150							
C	20	25							

*Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA PHONOLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.02	200	11508	P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C3	100		11534	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C4	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	①
C5	.15	200	11510	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C6	.15	200	11510	P288N-15		CUB2P15	GEM-2015	2TM-P15	
C7	.02	200	11508	P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C8	.06	200	11509	P288N-06		CUB6S6	GEM-416	6TM-S6	

① Some versions may use .06mfd in this application (Part#11509)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHONOLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	11512	B-76				Volume
B	Switch			KB-1 *				

*Use KR-1 on red label control

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PHONOLA PART No.	NOTES
R2	560K		8842	
R3	1.2meg		9893	
R4	560Ω		10921	
R5	270K		8841	
R6	470K		10305	
R7	4700Ω		10429	
R8	150Ω		9897	
R9	2200Ω		10986	
R10	39Ω		10428	
R11	120Ω 5%	4	10306	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PHONOLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2300	1.6Ω	11503	Z1001	A-2901	AU-608		24S60	S-51X	

SPEAKER

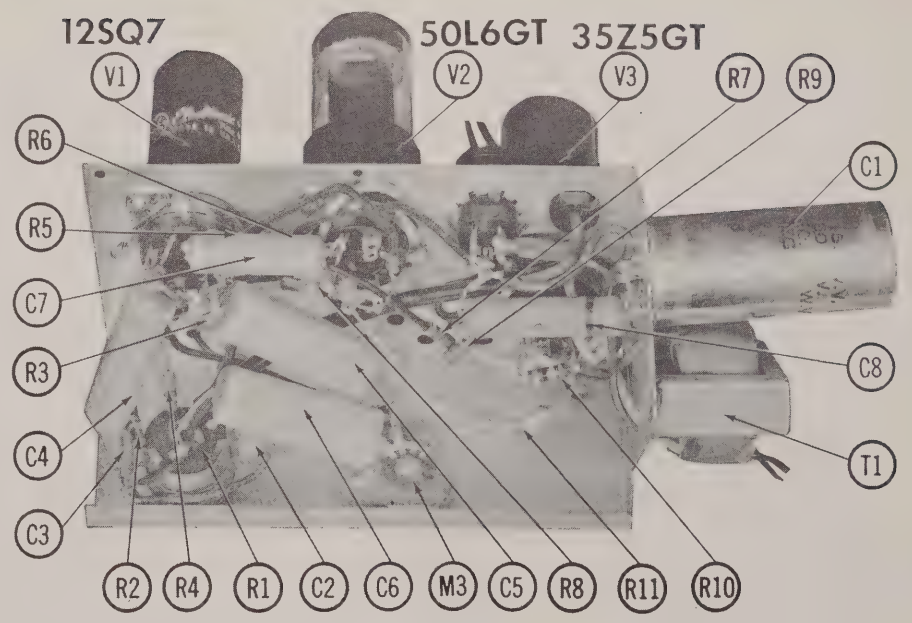
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA PHONOLA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	11792	4A07	
SP2	5"	PM	3-4Ω	10901	52A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA PHONOLA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	12126	55-T *P-81-T	GD-J	56 *2756	PT-2	*Tone arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA PHONOLA PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	12133	† A-71 or †♦ A-71SD or ♦ A-71D	* W-8TPA or † W-8TPS or †♦ W-8DS or ♦ W-8TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	PHONOLA PART No.	NOTES
M3	Switch	11513	Tone (3-Position, Rotary wafer type)
M4	Motor	12278	With Turntable
	Motor	12386	With Turntable (Spring mounted disc for 45 rpm records)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	12087	Volume Tone
Case	11882	Specify Brown or Tan

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

*TRADE MARK

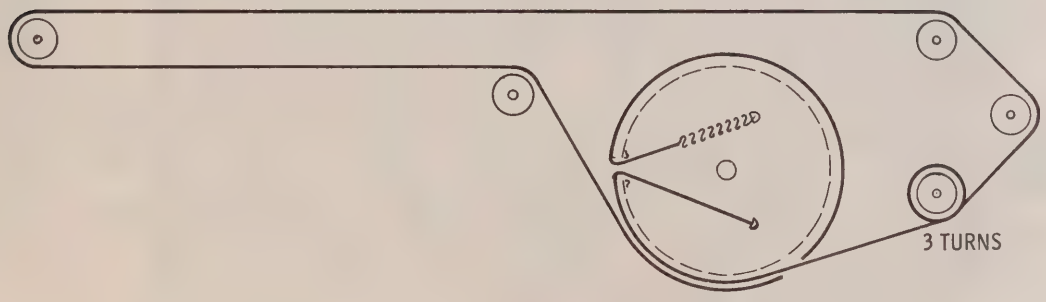
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SHERWOOD MODEL S-3000

SHERWOOD MODEL S-3000

SHERWOOD MODEL S-3000

TRADE NAME	Sherwood Model S-3000
MANUFACTURER	Sherwood Electronic Lab., Inc., 2802 W. Cullum Ave., Chicago 18, Illinois
TYPE SET	AC Operated FM Tuner
TUBES	Ten
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .43 Amp. @ 117 Volts AC (44 Watts)
TUNING RANGE—FREQ. MOD.	88-108MC



TUNING GANG FULLY CLOSED

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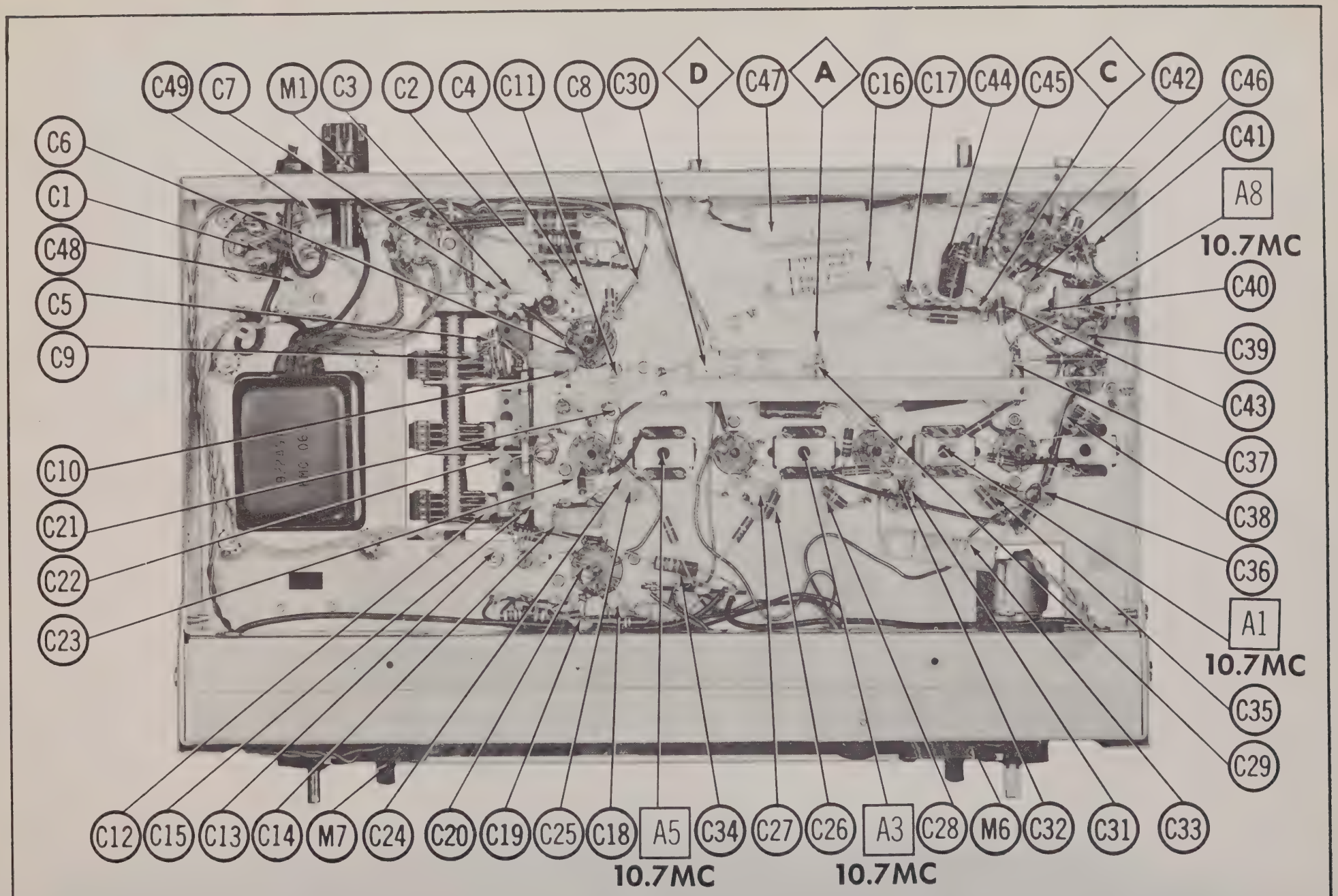
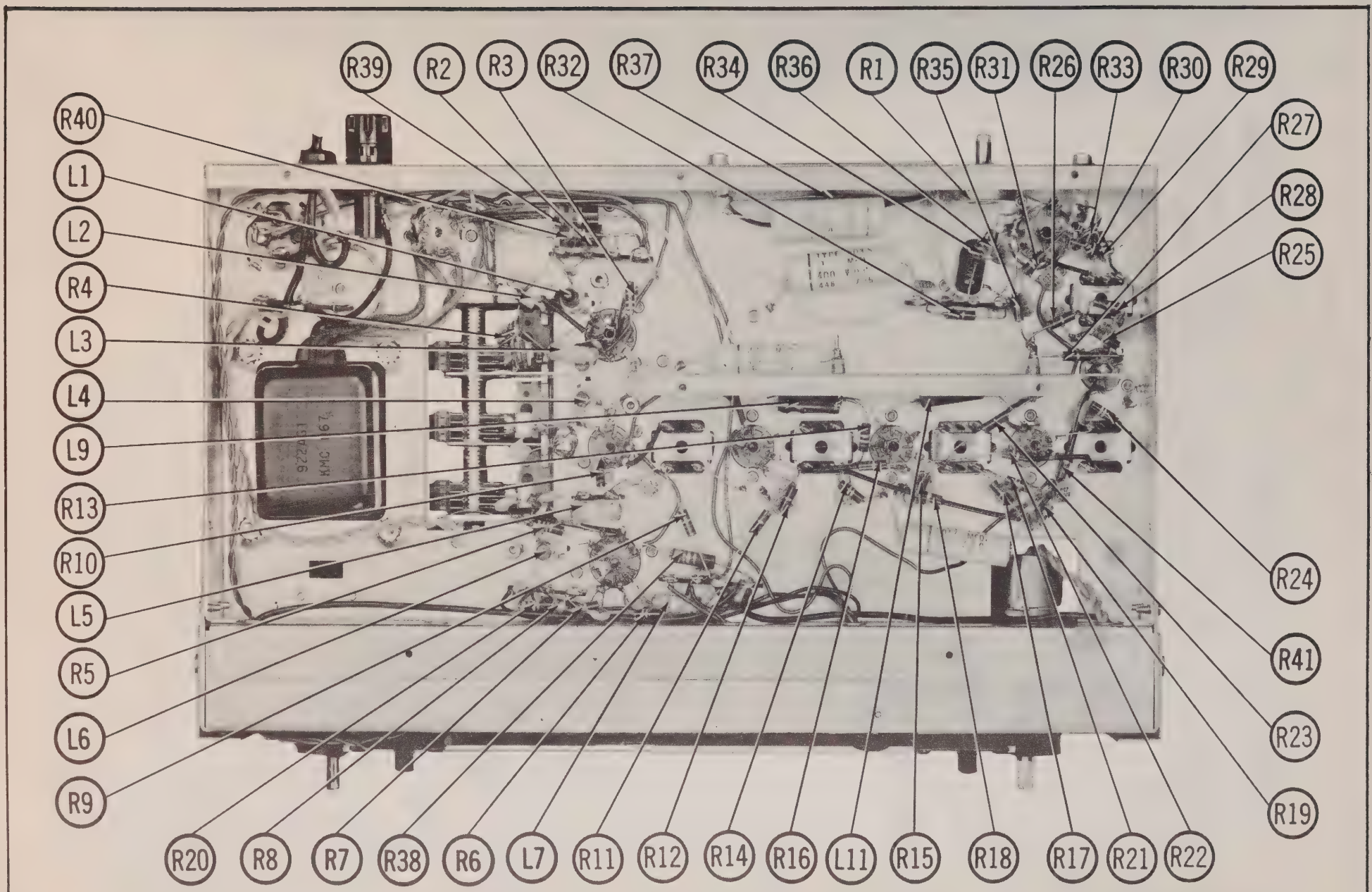
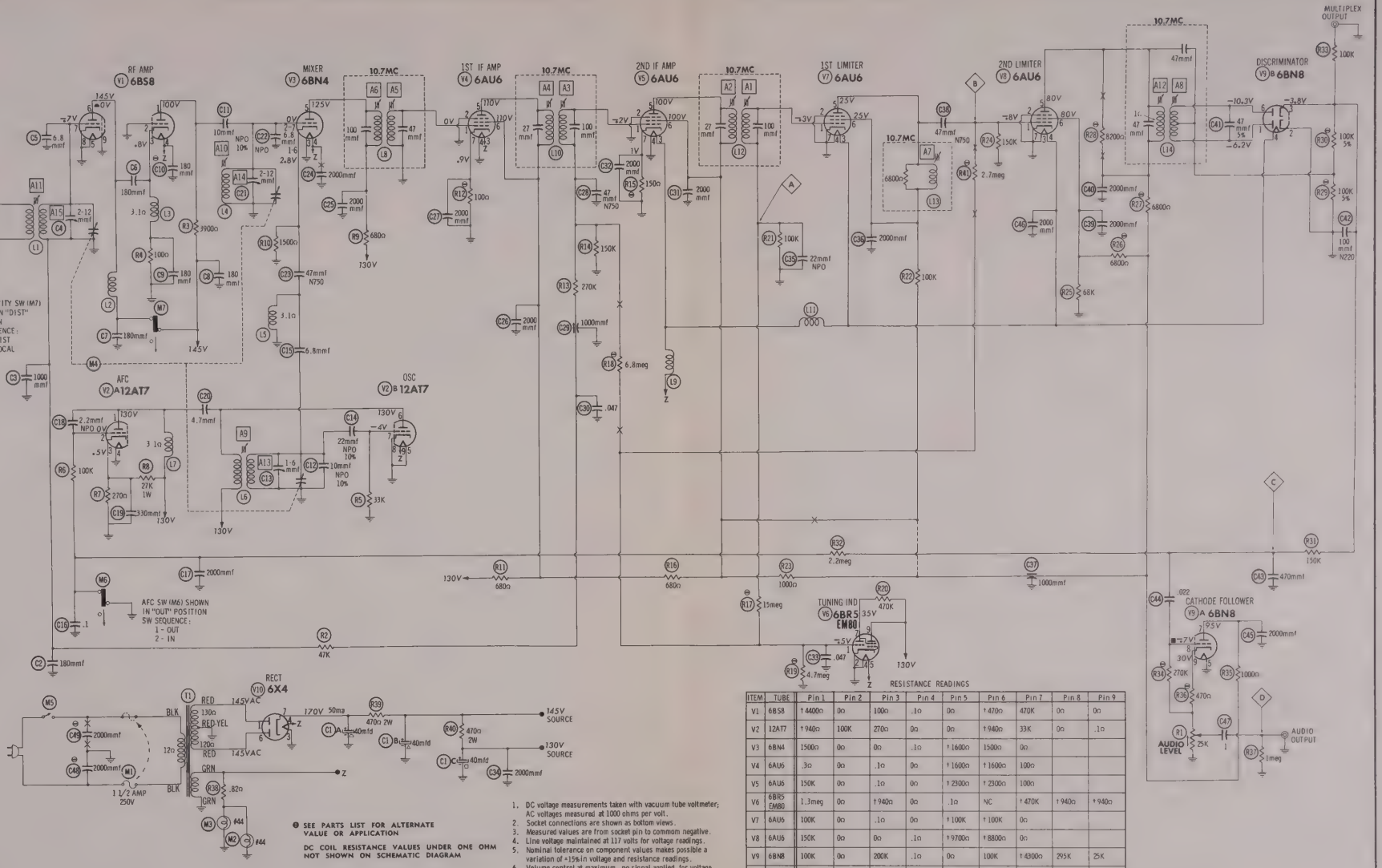


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION


RF AMP V1 6BS8
MIXER V3 6BN4
1ST IF AMP V4 6AU6
2ND IF AMP V5 6AU6
1ST LIMITER V7 6AU6
2ND LIMITER V8 6AU6
DISCRIMINATOR V9 B 6BN8
MULTIPLEX OUTPUT
10.7MC
ANT
SENSITIVITY SW (M7) SHOWN IN "DIST" POSITION SW SEQUENCE: 1 - DIST 2 - LOCAL
AFC V2 A 12AT7
OSC V2 B 12AT7
AFC SW (M6) SHOWN IN "OUT" POSITION SW SEQUENCE: 1 - OUT 2 - IN
TUNING IND V6 6BR5 EM80
CATHODE FOLLOWER V9 A 6BN8
AUDIO LEVEL
AUDIO OUTPUT
RECT V10 6X4
145V SOURCE
130V SOURCE
1 1/2 AMP 250V
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	↑4400Ω	0Ω	100Ω	.1Ω	0Ω	↑470Ω	470K	0Ω	0Ω
V2	12AT7	↑940Ω	100K	270Ω	0Ω	0Ω	↑940Ω	33K	0Ω	.1Ω
V3	6BN4	1500Ω	0Ω	0Ω	.1Ω	↑1600Ω	1500Ω	0Ω		
V4	6AU6	3Ω	0Ω	.1Ω	0Ω	↑1600Ω	↑1600Ω	100Ω		
V5	6AU6	150K	0Ω	.1Ω	0Ω	↑2300Ω	↑2300Ω	100Ω		
V6	6BR5 EM80	1.3meg	0Ω	↑940Ω	0Ω	.1Ω	NC	↑470K	↑940Ω	↑940Ω
V7	6AU6	100K	0Ω	.1Ω	0Ω	↑100K	↑100K	0Ω		
V8	6AU6	150K	0Ω	0Ω	.1Ω	↑9700Ω	↑8800Ω	0Ω		
V9	6BN8	100K	0Ω	200K	.1Ω	0Ω	100K	↑4300Ω	295K	25K
V10	6X4	130Ω	0Ω	0Ω	.1Ω	NC	120Ω	20K(Min)		

▲ MEASURED IN "DISTANT" POSITION
■ MEASURED FROM PIN 9 OF V9
↑ MEASURED FROM PIN 7 OF V10
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

401-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

FM RF IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 6 (grid) of 6BN4 (V3). Low side to chassis.	10.7MC (Unmod)	Point of non-interference	DC probe to point Ⓐ. Low side to chassis	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	"	"	"	"	DC probe thru 100K to point Ⓑ. Low side to chassis.	A7	"
3.	"	"	"	"	DC probe to point Ⓒ. Low side to chassis	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
4.		300Ω Balanced Input. See Fig. 1	90MC (400∿ Mod) (50KC Swp)	90MC	AC probe to point Ⓓ. Low side to chassis	A9, A10, A11, A12	Adjust for maximum deflection.
5.		"	106MC (400∿ Mod) (50KC Swp)	106MC	"	A13, A14, A15	Adjust for maximum deflection. Repeat steps 4 and 5.

FM RF IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 6 (grid) of 6BN4 (V3). Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis	A1, A2, A3, A4, A5, A6	Adjust for maximum amplitude and symmetry similar to Fig. 2.
2.	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis	A7	"
3.	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis	A8	Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 3.
4.		300Ω Balanced Input. See Fig. 1.	90MC (400∿ Mod) (50KC Swp)	90MC	Vert. Amp. to point Ⓓ. Low side to chassis	A9, A10, A11, A12	Adjust for maximum amplitude and symmetry similar to Fig. 2.
5.		"	106MC (400∿ Mod) (50KC Swp)	106MC	"	A13, A14, A15	Adjust for maximum amplitude and symmetry similar to Fig. 2. Repeat steps 4 and 5.
6.		"	106MC (400∿ Mod) (500KC Swp)	106MC	Vert. Amp. thru 100K to point Ⓑ. Low side to chassis	A1, A2, A3 A4, A5, A6, A7	Check response. If necessary retouch for maximum amplitude and symmetry similar to Fig. 2.

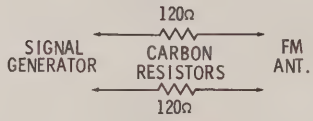


FIG. 1

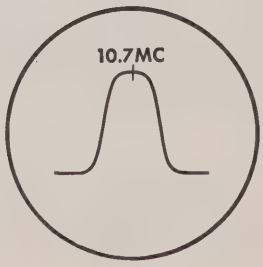


FIG. 2

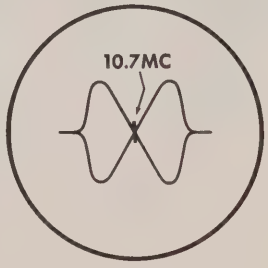


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BS8	
V2	Osc. - AFC	12AT7	
V3	Mixer	6BN4	
V4	1st IF Amplifier	6AU6	
V5	2nd IF Amplifier	6AU6	

ITEM No.	USE	TYPE	NOTES
V6	Tuning Indicator	6BR5/EM80	
V7	1st Limiter	6AU6	
V8	2nd Limiter	6AU6	
V9	Discriminator-Cath. Foll.	6BN8	
V10	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SHERWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▰40	350			D0020	FP377		D-167 MT-4540	R2478 *
B	▲40	350							
C	■40	350							

* Non Catalog Item

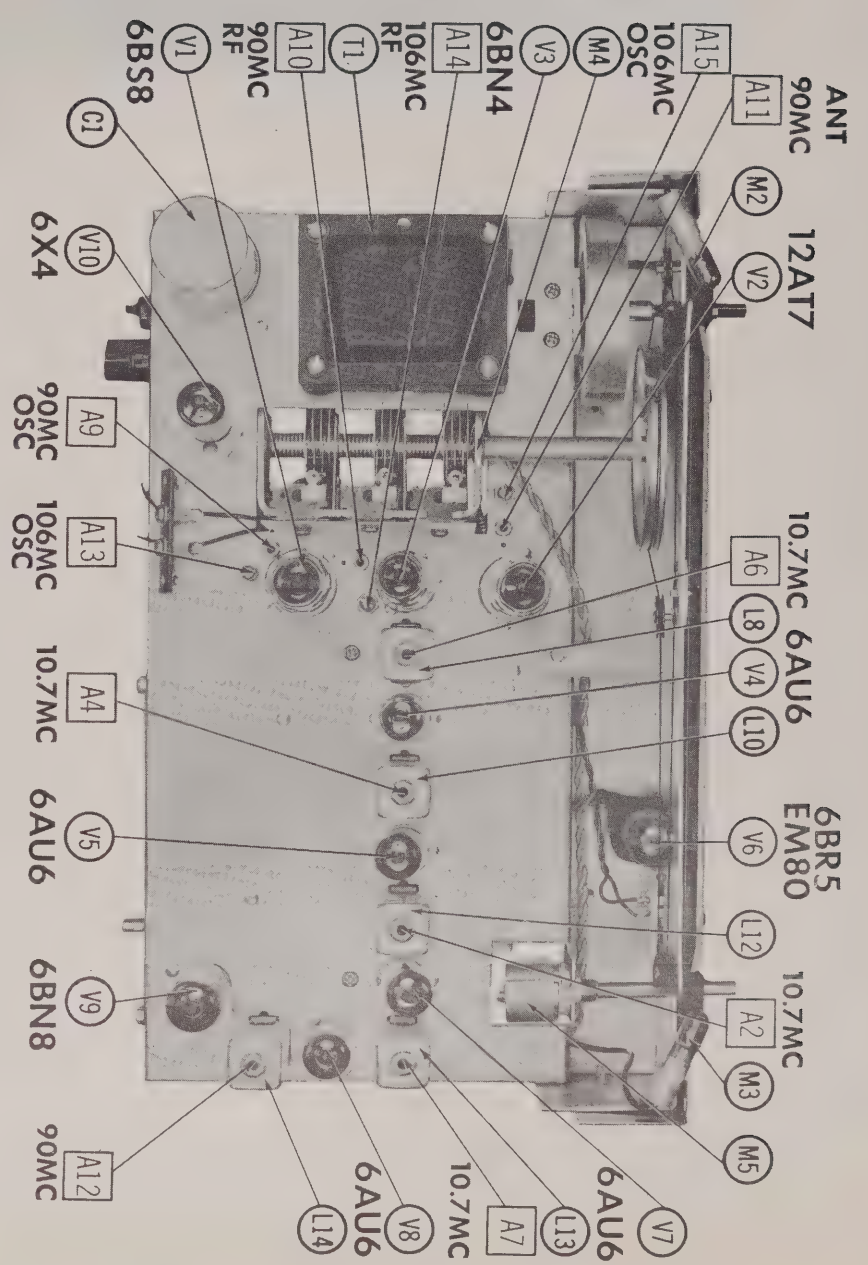
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SHERWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	180			DI-00018	DD-181	L10T18		5GA-T18	
C3	1000			BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C4	2-12								
C5	6.8			NPO-DI6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	
C6	180			DI-00018	DD-181	L10T18		5GA-T18	
C7	180			DI-00018	DD-181	L10T18		5GA-T18	
C8	180			DI-00018	DD-181	L10T18		5GA-T18	
C9	180			DI-00018	DD-181	L10T18		5GA-T18	
C10	180			DI-00018	DD-181	L10T18		5GA-T18	①
C11	10			NPO-DI 10	DTZ-10	C10Q1C	ZT-541	5TCC-Q1	NPO 10%
C12	10			NPO-DI 10	DTZ-10	C10Q1C	ZT-541	5TCC-Q1	NPO 10%
C13	1-6				829-6				
C14	22			NPO-DI 22	DTZ-22	C10Q22C		5TCC-Q22	NPO 10%
C15	6.8			NPO-DI 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	
C16	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C17	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C18	2.2			NPO-SI 2.2	DTZ-2R2	C10V22C		5TCCB-V22	NPO
C19	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C20	4.7			NPO-DI 4.7	DTZ-4R7	C10V47C	ZT-5547	5TCCB-V47	
C21	2-12								
C22	6.8			NPO-DI 6.8	DTZ-6R8	C10V68C	ZT-5568	5TCCB-V68	NPO
C23	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C24	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C25	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C26	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C27	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C28	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C29	1000			EF-001	MFT-1000			503C-D1	
C30	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C31	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C32	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C33	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C34	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C35	22			NPO-DI 22	DTZ-22	C10Q22C		5TCC-Q22	NPO
C36	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C37	1000			EF-001	MFT-1000			503C-D1	
C38	47			N750-DI 47	DTN-47	C10Q47U	NT-5447	5TCU-Q47	N750
C39	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C40	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C41	47			1469-000047	TCZ-47	22R5Q47		MS-447	5% N220
C42	100								
C43	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C44	.022	400		P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C45	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C46	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C47	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C48	2000								②①
C49	2000								

① Not used in some versions. ② Some versions may use 5000mmf in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SHERWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A B	25K Shaft	½	670AD4	B-26 Not Req.	A47-25K-S FKS-1/4	B11-120 TM2-Kit	TA253L Not Req.	Audio Level

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SHERWOOD PART No.	NOTES
	OHMS	WATT		
R2	47K			
R3	3900Ω			
R4	100Ω			
R5	33K			
R6	100K			
R7	270Ω			
R8	27K	1		
R9	680Ω			
R10	1500Ω			
R11	680Ω			
R12	100Ω			Note 1
R13	270K			
R14	150K			
R15	150Ω			Note 2
R16	680Ω			
R17	15meg			Note 3
R18	6.8meg			Note 4
R19	4.7meg			Note 5
R20	470K			
R21	100K			

ITEM No.	RATING		SHERWOOD PART No.	NOTES
	OHMS	WATT		
R22	100K			
R23	1000Ω			
R24	150K			
R25	68K			
R26	6800Ω			Note 6
R27	6800Ω			Note 7
R28	8200Ω			Note 4
R29	100K 5%			Note 8
R30	100K 5%			Note 8
R31	150K			
R32	2.2meg			
R33	100K			
R34	270K			Note 9
R35	1000Ω			
R36	470Ω			Note 10
R37	1meg			
R38	.82Ω			
R39	470Ω	2		
R40	470Ω	2		
R41	2.7meg			Note 4

Note 1. Some versions may use 150Ω in this application.
Note 2. Some versions may use 100Ω in this application.
Note 3. Some versions may use 10meg in this application.
Note 4. Not used in some versions.
Note 5. Some versions may use 2.7meg in this application.
Note 6. Some versions may use 33K in this application.
Note 7. Some versions may use 47K in this application.
Note 8. Some versions may use 82K in this application.
Note 9. Some versions may use 470K in this application.
Note 10. Some versions may use 1500Ω in this application.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SHERWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .43A	320VCT @ .050A	6.3V @ 4.5A	922AG1						

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SHERWOOD PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Trans.						
L2	RF Choke		19-1000	BC-561	4602		1 Microhenry
L3	Cathode Choke		19-1003	BC-564	4608		3.9 Microhenries; IRC Part #CLA
L4	Mixer Coil						
L5	RF Choke		19-1003	BC-564	4608		3.9 Microhenries; IRC Part #CLA

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SHERWOOD PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L6	Osc. Coil						
L7	RF Choke		19-1003	BC-564	4608		3.9 Microhenries; IRC Part #CLA
L8	1st IF		16-3487	FM-254	1463		
L9	Fil. Choke		19-1002	BC-563	4606		2.4 Microhenries
L10	2nd IF		16-3487	FM-254	1463		
L11	Fil. Choke		19-1002	BC-563	4606		2.4 Microhenries
L12	3rd IF		16-3487	FM-254	1463		
L13	Limiter						
L14	Discriminator		17-3494 *	FM-253 *	1464 *		* Remove C41

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SHERWOOD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1½A 250V			31201.5	342003	AGC 1½	HKP

MISCELLANEOUS

ITEM No.	PART NAME	SHERWOOD PART No.	NOTES
M2	Dial Lamp		#44
M3	Dial Lamp		#44
M4	Tuning Cap.		3 Gang
M5	Switch		On-Off
M6	Switch		AFC (Slide Type, SPST)
M7	Switch		Sensitivity (Slide Type, SPST)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SYLVANIA CHASSIS 1-318-1, -2, -3

SYLVANIA CHASSIS 1-318-1, -2, -3

SYLVANIA CHASSIS 1-318-1, -2, -3

GENERAL INFORMATION

The Sylvania Chassis 1-318-1, 1-318-2 and 1-318-3 Record Changers automatically change as many as ten 12" records, twelve 10" records, ten 7", 33-1/3-rpm records, or fifteen 7", 45-rpm records, or any assortment of ten 7", 10" and 12" records of the same speed.

These changers have four speeds 16-2/3, 33-1/3, 45 and 78-rpm. Seven-inch, 45-rpm records can be played on these changers by inserting an adaptor in the record or with a special 45-rpm spindle available as an accessory.

These changers automatically shut off after the last record has been played.

Connect these changers only to an outlet supplying 117 volts, 60 cycles AC unless otherwise specified.

Supplied by:

Sylvania Home Electronics, Div.,
Of Sylvania Electric Products Inc.,
700 Ellicott Street Batavia, N. Y.

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HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

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SET 401 FOLDER 13

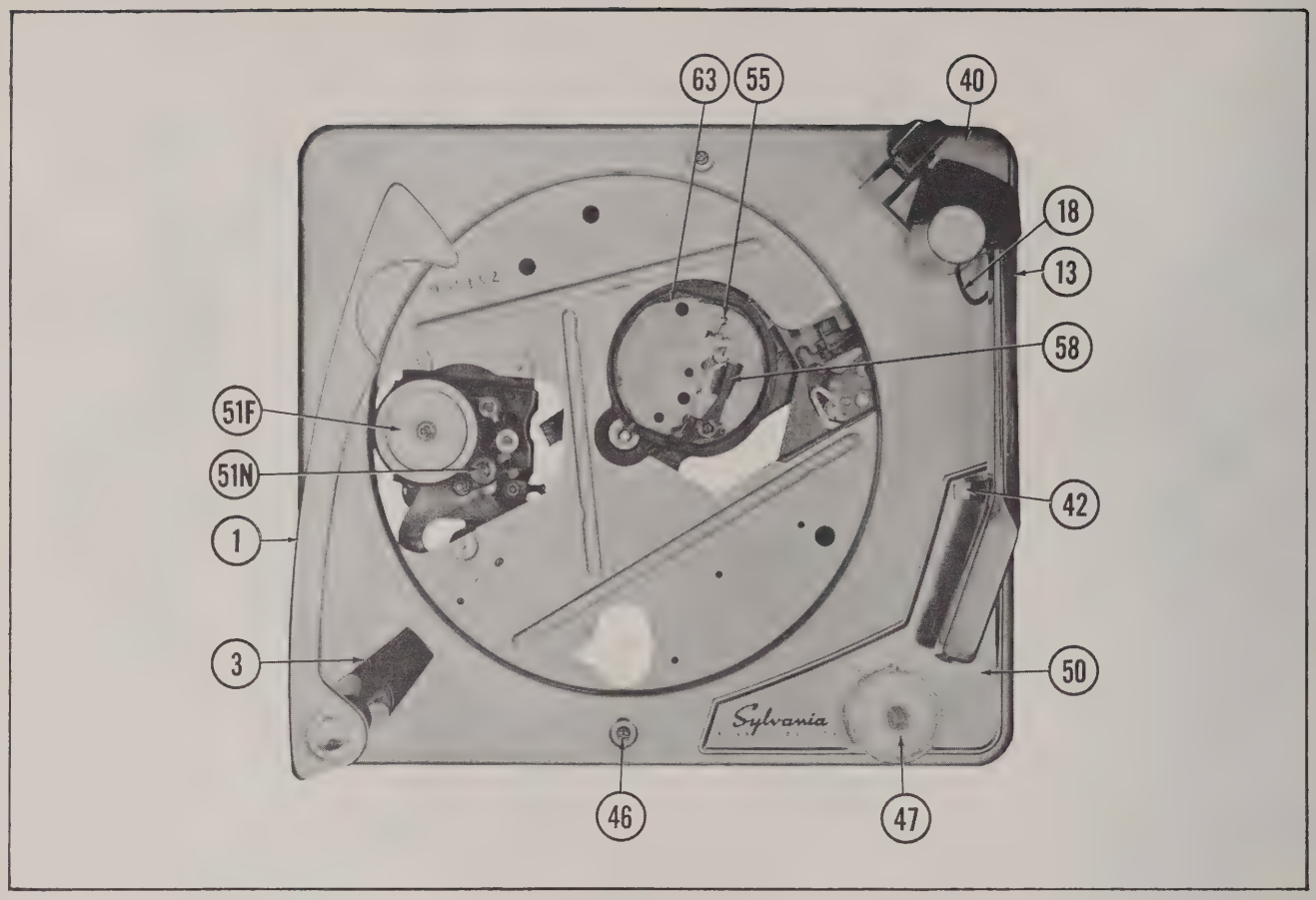


FIG. 1 TOP VIEW OF CHANGER WITH TURNTABLE REMOVED

PREPARING FOR OPERATION

Differences In Sylvania Changers :

The record changers are similar mechanically. The major differences are the motors, and record size selector in Chassis 1-318-1.

Note: For information about the preceding, refer to exploded view and parts list.

Shipping Screws

Before placing in operation, the changer must be floating freely on mounting spring (125). During shipment, the mechanism is secured by two shipping screws (38 and 45). To float the changer, turn the two shipping screws clockwise as far as they will go.

Leveling Record Changer

For best results, the record changer should be level. Use a suitable level on the baseplate. Adequate shims can be used under the baseplate or cabinet to achieve a perfect level.

OPERATING INSTRUCTIONS

Loading

1. Lift straight up on record support (1) until record support (1) clears spindle (4). Swing record support left until its locating pin drops into locating groove of the record support housing (3).

Note: 16-2/3, 33-1/3, 45 and 78-rpm records cannot be intermixed. Speed control knob (49) must be reset for each type of record.

2. Place records on spindle (4) and lower to offset shelf. Hold records level and replace record support (1) over records.

To Play 78-rpm Records

1. Speed control knob (49) must be in "78" position.

2. On changers using a turnover needle, turnover lever must be set for "78" position.

3. To start changer, turn "On-Off-Reject" knob to "Reject" position and release slowly to "On" position. The Sylvania changer now operates automatically until last record has been played, at which time tone arm (13) returns to its rest and mechanism shuts off

To Play 45 rpm Records

1. Speed control knob (49) must be in "45" position.

2. On changers having a turnover needle, the turnover lever must be in "LP" position.

3. 45-rpm records are manufactured with a 1-1/2 inch center hole. If used with conventional spindle (4), an adaptor must be inserted in the record. However, a special spindle is available that eliminates the need for adaptors.

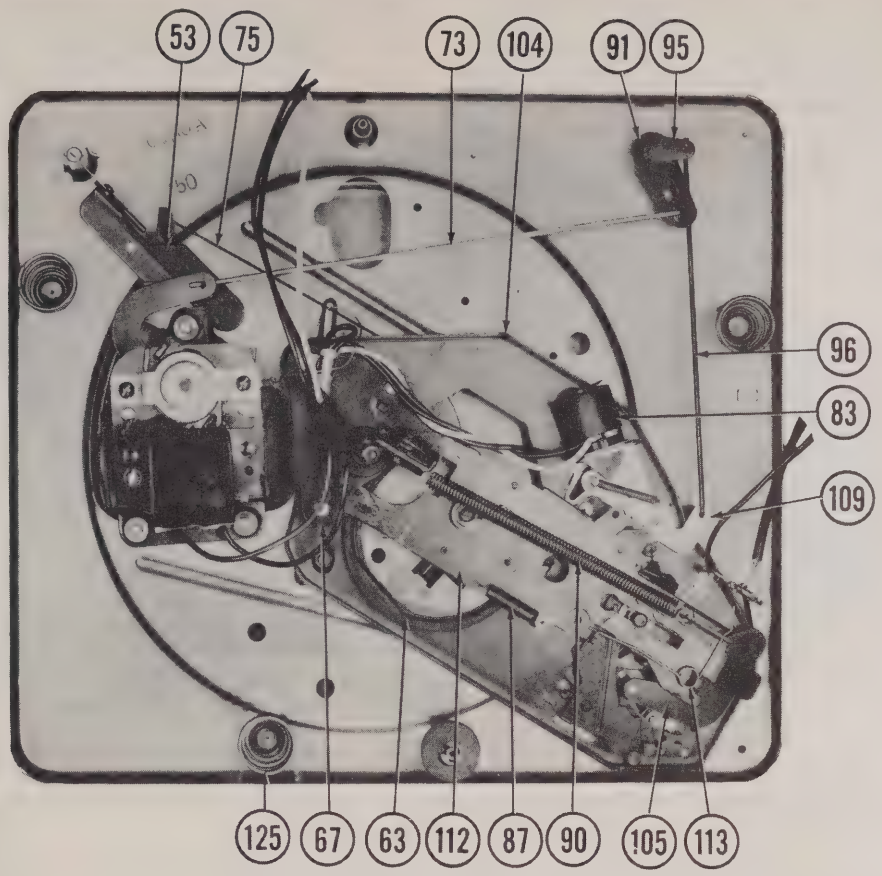


FIG. 2 BOTTOM VIEW OF CHANGER

45-rpm Spindle Operating Instructions

1. Lift up on record support (1) and turn to left as far as it will go.

2. Be sure tone arm is in its rest position.

3. Grasp spindle between thumb and forefinger; on actuator (128), squeeze actuator slightly and place spindle on center spindle (4) with actuator facing selector housing (40). Turn spindle slightly to left or right until slot in bottom of spindle lines up with gate on center post (4). Push down on spindle until it comes to rest on turntable. The 45-rpm spindle is now ready to operate.

To Play 33-1/3-rpm Records

1. Speed control knob (49) must be in "33" position.

2. On changer having a turnover needle, turnover lever must be in "LP" position.

To Play 16-2/3-rpm Records

1. Speed control knob (49) must be in "16" position.

2. On changer having a turnover needle, turnover lever must be in "LP" position.

Rejecting

To reject a record while changer is operating, turn "On-Off-Reject" knob (46) to "Reject" and slowly release to "On" position.

Note: When changer is to be out of service for any length of time, it should be left in neutral. This position is idenfified by the letter "N" engraved on baseplate or speed control knob (49). When in this position, the motor shaft and idler wheel do not come in contact with the drive wheels, thereby preventing any flat spots from developing on the tires.

CHANGE CYCLE

These changers are equipped with a velocity trip mechanism. Change cycle is started by the faster inward motion of the tone arm when the needle enters the leadout groove at end of record.

Tone arm assembly and tone arm actuating lever (105) are secured at opposite ends of tone arm shaft so they move in unison. As tone arm nears end of record, tone arm actuating lever (105) pushes push trip rod (107). This engages push trip rod (55), rotating pawl locator (58) to move trip pawl (59) toward turntable hub by action of thrust washer (57). While a record is playing, small motions of trip pawl (59) are not sufficient to trip the mechanism because ,on each revolution of the turntable, wiping action by trip cam (point "A" on exploded view) moves trip pawl (59) back far enough to clear the trip cam.

When the needle enters leadout grooves, causing tone arm to advance rapidly toward spindle, trip pawl (59) is moved far enough to engage trip cam (point "A" on exploded view). As trip cam engages trip pawl (59), cam wheel (63) is pushed counterclockwise until it contacts serrated portion of turntable hub. When turntable

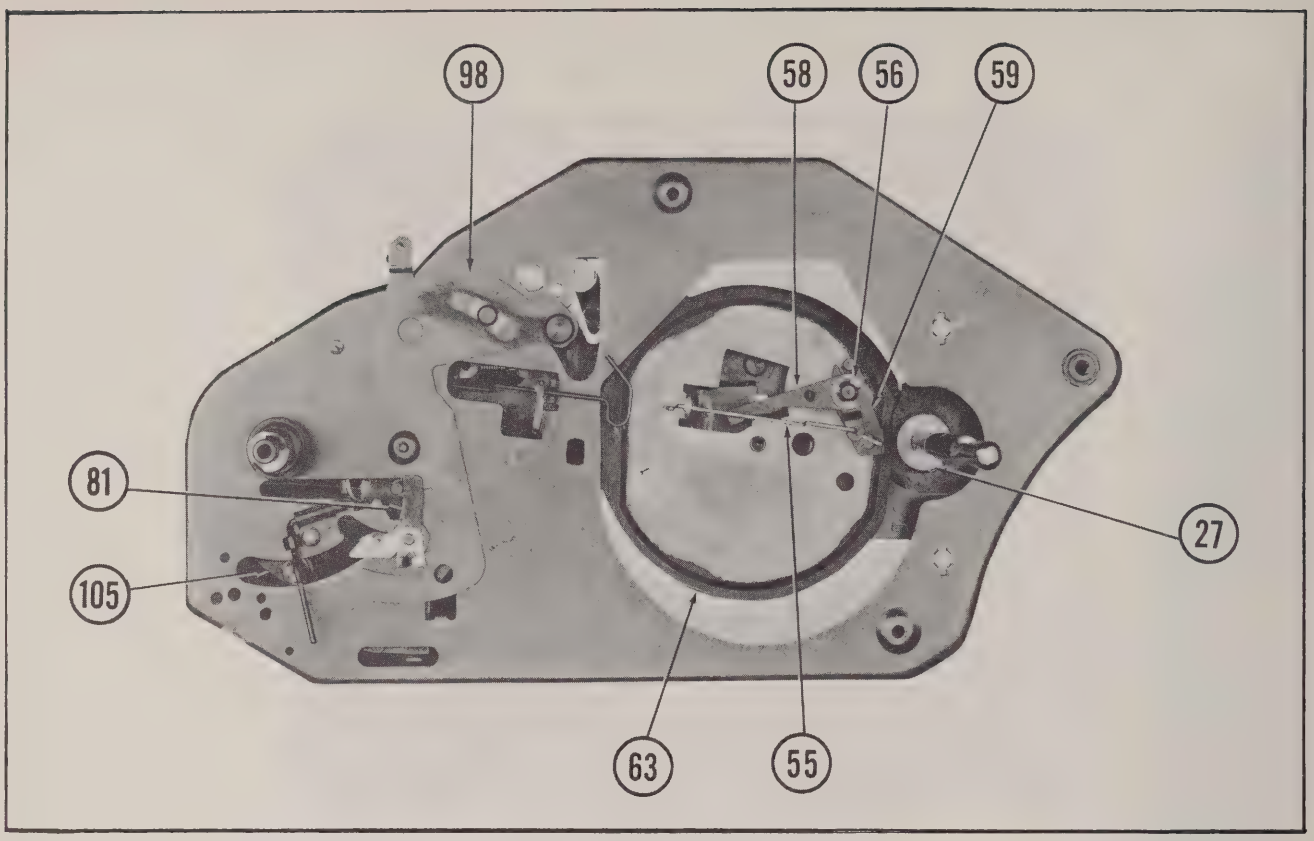


FIG. 3 TOP VIEW OF MECHANISM

rotates, eccentric cam wheel (63) rotates, pushing main slide (112) away from spindle.

As main slide (112) begins to move, the cam surface (point "B" on exploded view) pushes lift shaft (114) upward, raising tone arm clear of record. At the same time, spring (113) contacts tone arm actuating lever (105), swinging tone arm clear of turntable.

As cam wheel (63) continues to rotate, positioning stud on main slide (112) contacts and moves pawl locator (58) across cutout in cam wheel (63), resetting trip pawl (59) for next change cycle.

At the same time, lift rod (101) rides down incline on rear of main slide (112), allowing selector lever assembly (items 29 thru 37) to pivot upward and friction slide (34) to be pushed downward by return spring (35). As selector lever assembly (items 29 thru 37) pivots outward, positioning rod (30) drops down in front of tabs on lower selector assembly (111).

Front edge of slot (point "C" on exploded view) in main slide (112) now contacts ejector link on bracket assembly (67). Ejector link moves pushoff shaft (4A) upward, actuating spindle assembly (4), dropping a record onto turntable.

Simultaneously, stud on tone arm actuating lever (105) engages lower selector assembly (111), moving it clear of locking lever (80). Main slide (112), at this time, moves toward spindle.

If a 7" record is being changed, positioning rod (30) remains in front of 12" selector lever and 10" selector lever (all part of item 111), preventing them from engaging with stud on tone arm actuating lever (105). The 7" selector lever is now free to move against stud on tone arm actuating lever (105).

If a 10" record is being changed, edge of the record strikes selector lever arm on upper selector assembly (items 29 thru 37), moving it down far enough to lift positioning rod (30) clear of 10" selector lever (part of item 111). In this position, 12" selector lever is locked in position and 7" and 10" selector levers contact stud on tone arm actuating lever (105). Since setdown step in 10" selector lever is nearer stud, it will engage setdown step in 10" selector lever first, assuring proper setdown point for 10" records.

If a 12" record is being changed, edge of record strikes arm which lifts positioning rod (30) clear of all three selector levers. In this position, stud on tone arm actuating lever (105) engages with setdown step in 12" selector lever first, positioning tone arm for 12" setdown point.

As main slide (112) continues moving toward spindle, one of the selector levers, which has been positioned by the size record being changed (see above), engages stud on tone arm actuating lever (105), pushing tone arm in over turntable by pressure applied by tone arm positioning spring (110), until stud engages setdown step in selector lever (111), stopping inward travel of tone arm. Tone arm is then lowered to lead-in groove of record as lift shaft (114) rides down cam surface (point "B" on exploded view) on main slide (112).

As tone arm is lowered to record, stud on rear of main slide (112) contacts lower selector assembly (111) and pushes it back far enough to release setdown step from stud on tone arm actuating lever (105), permitting tone arm to ride freely across record.

At this time, stud on rear of main slide (112) pushes locking arm (80) which in turn moves locking lever (80) far enough to engage pin on lower selector assembly (111), thereby locking lower selector assembly in out of cycle position.

As main slide nears end of its travel, index pin on bottom of cam wheel (63) rides into detent of cam latch (112A), preventing cam wheel (63) from engaging with turntable hub until next change cycle is started.

As soon as last record has been dropped, arm (1) drops below shelf on spindle assembly (4) and pressure arm shaft contacts shutoff lever on automatic shutoff assembly (53). When last record has finished playing, change starts again. However, this time, rest position lever (98) is pivoted inward due to shutoff rod (75) which, in turn, was actuated by shutoff spring (52) when pressure arm shaft contacted shutoff lever. As rest position lever (98) pivots inward, stud on bottom moves against cam surface on reject lever (112B) and tab at opposite end moves into path of stud on tone arm actuating lever (105). As tone arm swings outward from turntable, stud on tone arm actuating lever contacts tab on rest position lever (98), stopping tone arm directly over tone arm rest, thereby preventing stud on tone arm actuating lever (105) from traveling far enough to unlock lower selector assembly (111). At this time, stud on rest position lever (98) has moved behind cam surface on reject lever (112B), and as main slide (112) moves forward, stud contacts cam surface from rear, forcing reject lever (112B) toward "On-Off" switch assembly (109). Lift shaft (114) now rides down cam surface (point "B" on exploded view) on main slide (112), lowering tone arm to arm rest. Simultaneously, reject lever (112B) contacts stud on "On-Off" switch assembly (109), which in turn, is moved far enough to shut off the switch.

Operation of 45-rpm Spindle Mechanism

Center post (4) functions the same as before the 45-rpm spindle was placed on changer. As center post (4) is actuated, its ejector lever contacts actuator (128) on 45-rpm spindle and pushes it. This causes separators (130) to move out, in turn pulling in bolts (131). As bolts recede, separators (130), mounted above bolts, move out, separate lower record of a stack and support remaining records, while lower record drops to turntable.

Ejector lever on center post (4) then moves to its rest position, allowing actuators (128) on 45-rpm spindle to return with it by pressure of spring (133), causing separators (130) to move in and bolts (131) to move out. This permits bottom record to drop from separators to the bolts.

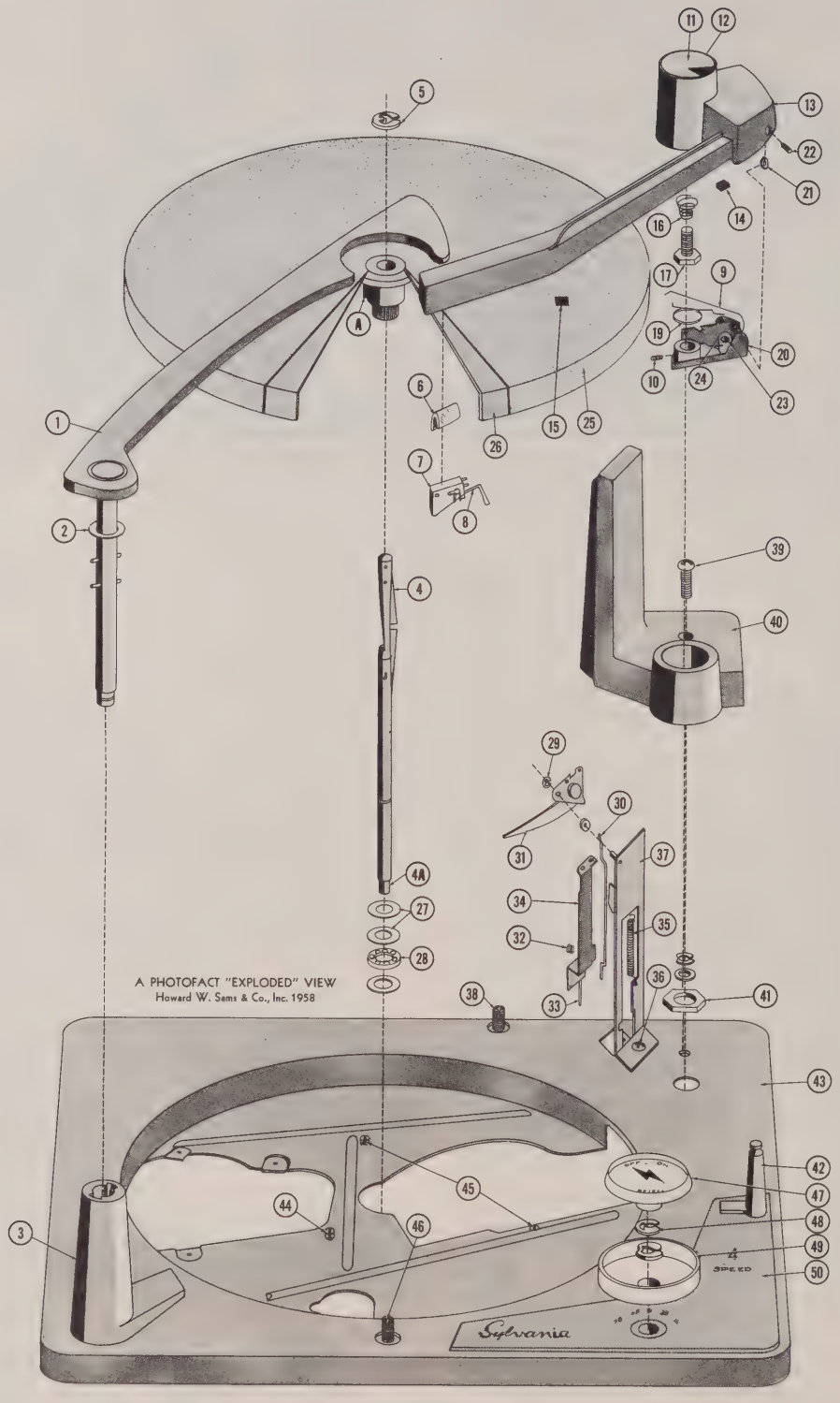


FIG. 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE

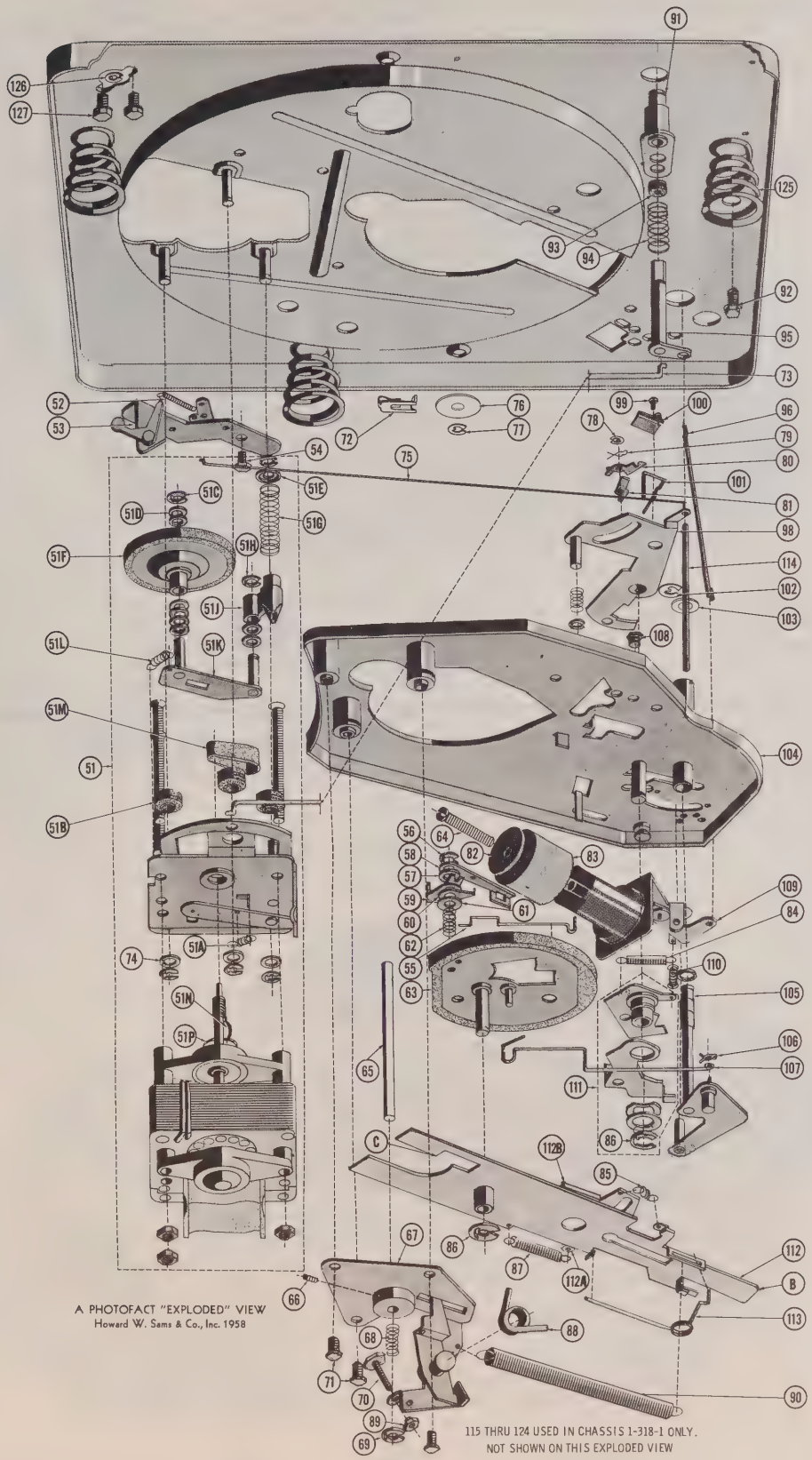

A PHOTOFACT "EXPLODED" VIEW
Howard W. Sams & Co., Inc. 1958
115 THRU 124 USED IN CHASSIS 1-318-1 ONLY.
NOT SHOWN ON THIS EXPLODED VIEW

FIG. 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE

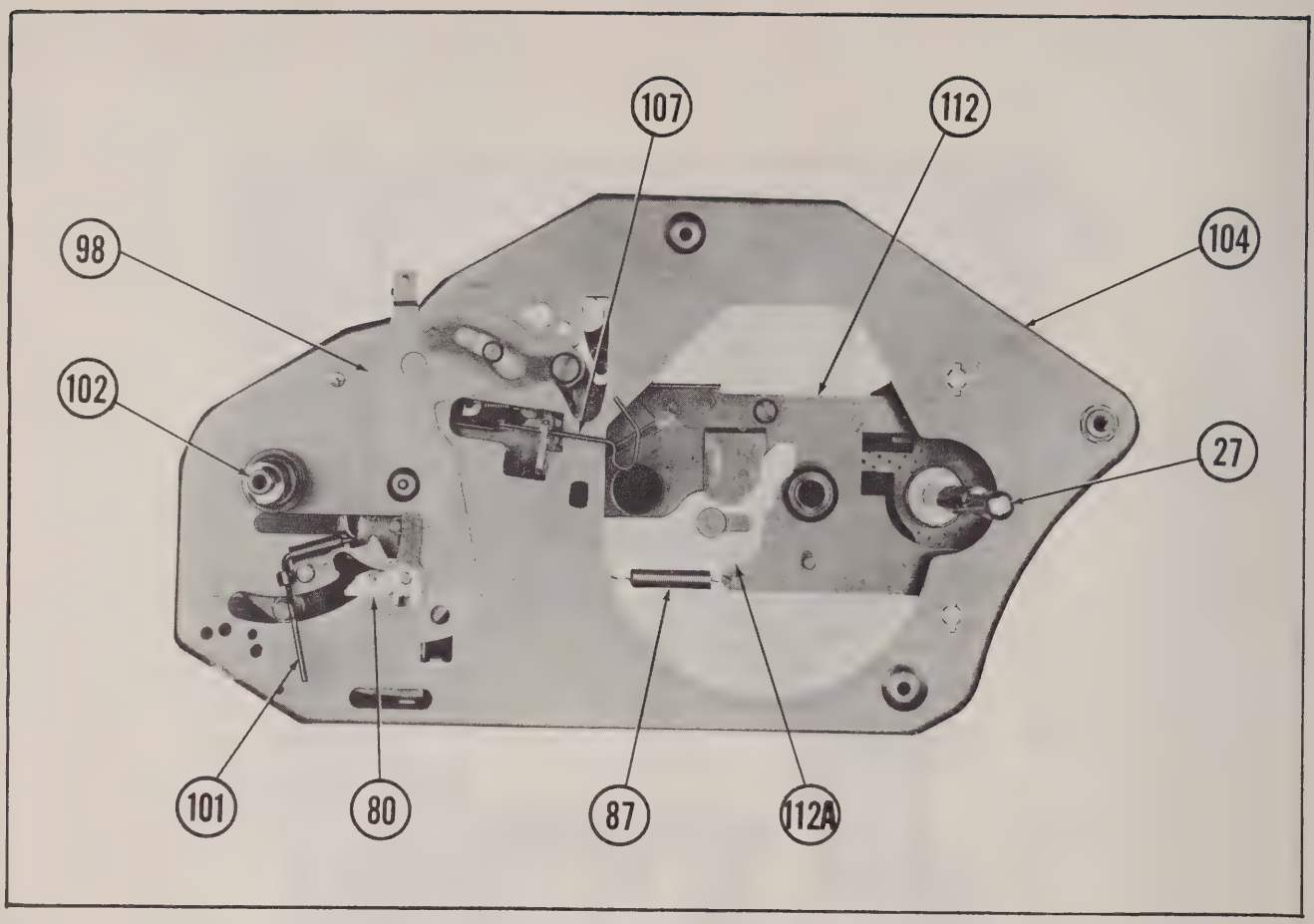


FIG. 5 TOP VIEW OF MECHANISM WITH CAM WHEEL REMOVED

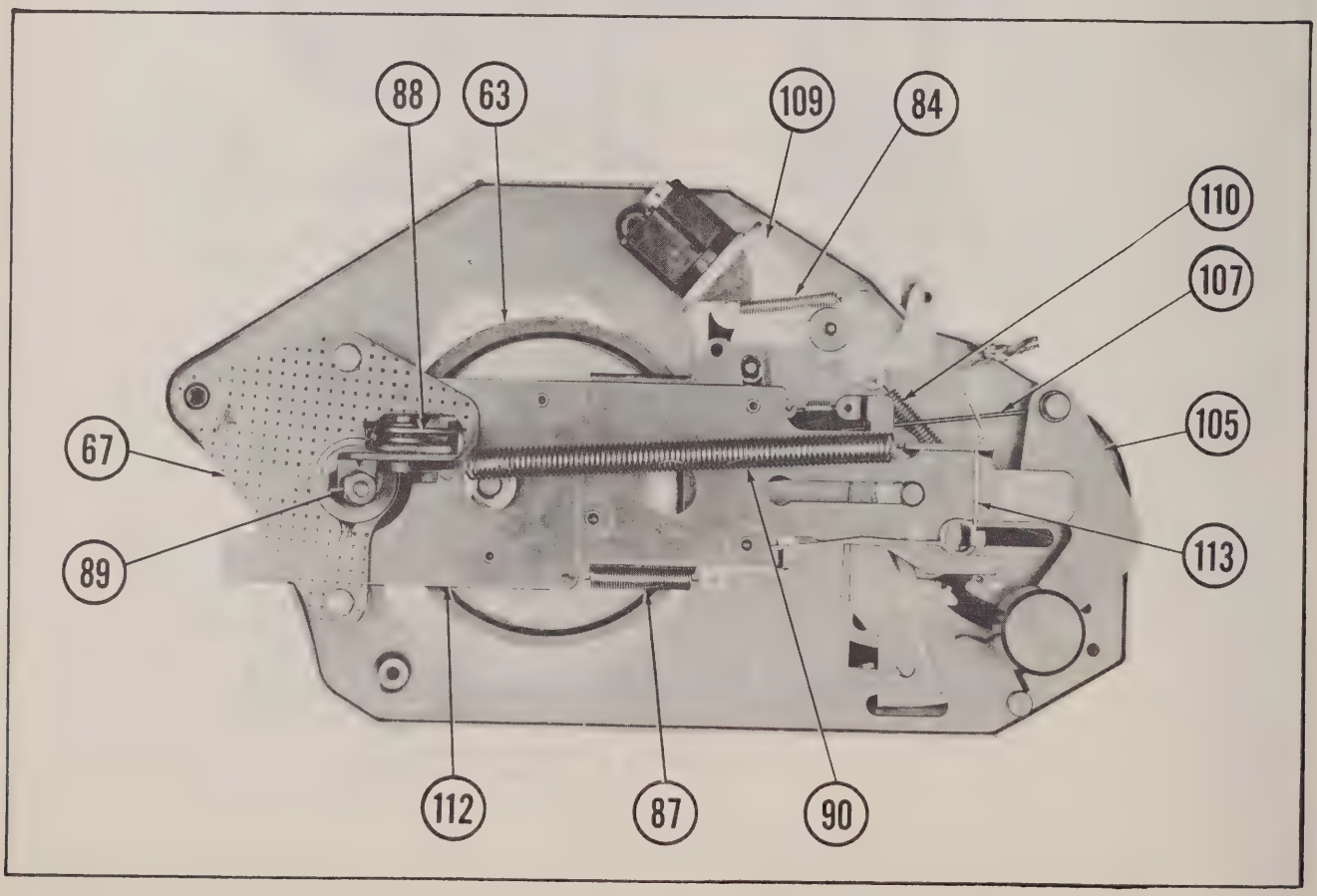


FIG. 6 BOTTOM VIEW OF MECHANISM

Needle Setdown

Setdown point of needle is adjusted by setdown adjustment screw (23). Turn this screw to adjust tone arm for correct setdown point on a 10" record. When correct setdown point is obtained for 10" position, 12" and 7" setdown points will be correct.

Tone Arm Height Adjustment

Tone arm height is adjusted by height adjustment screw (17). To raise height of tone arm, turn screw counterclockwise. To lower, turn clockwise. Tone arm height should be adjusted so tone arm misses underside of a record resting on spindle shelf.

Needle Pressure

Needle pressure should be between 8 and 12 grams. To adjust, turn small gear (part of item 20). To increase needle pressure, release gear (part of item 20) by raising pawl (part of item 20), and then readjust to correct pressure by rotating gear toward rear of changer. Moving gear toward front of changer decreases needle pressure.

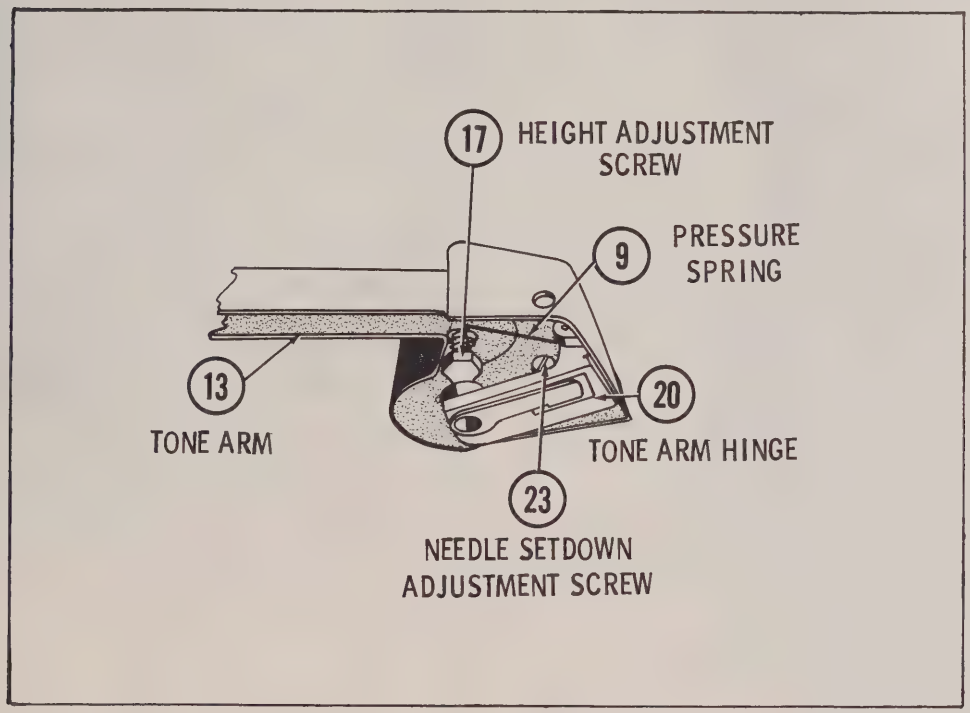


FIG. 7 TONE ARM ADJUSTMENTS

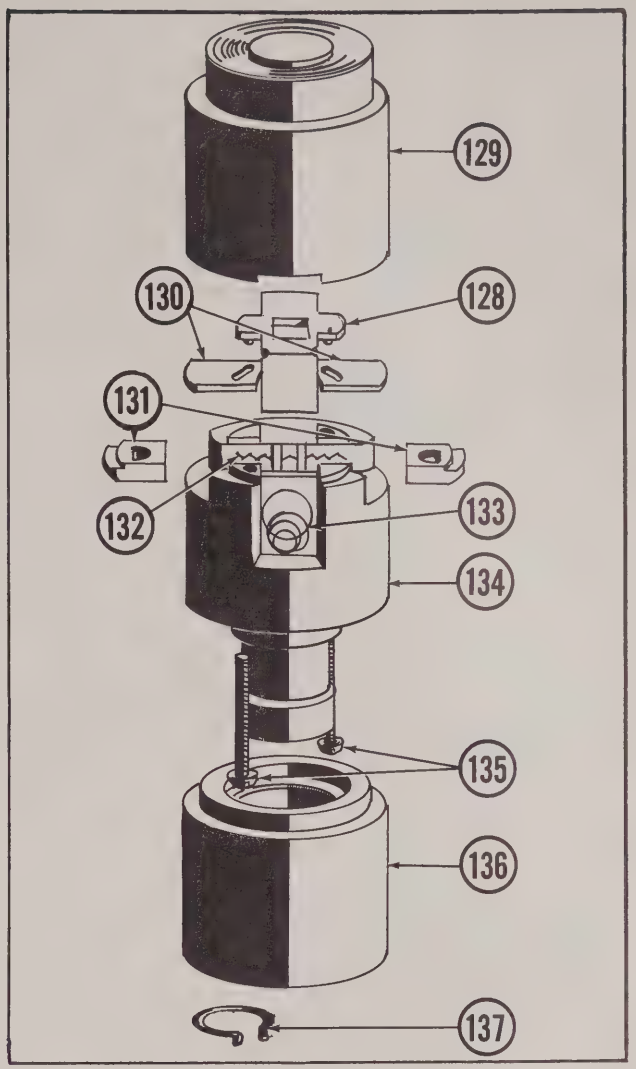
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	929-0014	Record Support Ass'y. (A)
	929-0015	Record Support Ass'y. (B)
	929-0013	Record Support Ass'y. (C)
2		Cork Washer
3	920-007	Record Support Housing (A)
	920-008	Record Support Housing (B)
	920-005	Record Support Housing (C)
4	922-0014	Spindle
5	554-0051	"C" Washer
6		Cartridge Mounting Bracket
7	916-0008	Cartridge With Needle (A)
	916-0007	Cartridge With Needle (B)
	916-0009	Cartridge With Needle (C)
8	902-0009	Diamond and Sapphire Needle (C)
	902-0008	Sapphire Needle (A) (B)
9		Retainer Spring
10	551-0035	Set Screw 8-32 x 3/16"
11		Cap
12	554-0060	Spring (A)
	554-0050	Spring (B) (C)
13	913-0009	Tone Arm (A)
	913-0010	Tone Arm (B)
	913-0008	Tone Arm (C)
14		Rubber Pad
15		Rubber Pad
16	496-0155	Height Adjustment Spring
17	551-0039	Height Adjustment Screw (A)
	551-0036	Height Adjustment Screw (B) (C)
18	193-0014	Pickup Cable
19	496-0154	Tone Arm Pivot Spring
20	933-0031	Tone Arm Hinge (A)
	933-0020	Tone Arm Hinge (B) (C)
21	552-0039	Hex Nut 8/32" (A)
	552-0038	Hex Nut 8/32" (B) (C)
22	551-0040	Pivot Screw 8/32" (A)
	551-0037	Pivot Screw 8/32" (B) (C)
23	551-0034	Screw 6-40 x 1/4"
24	496-0153	Friction Spring
25	488-0018	Turntable Cover (B)
	488-0016	Turntable Cover (C)
26	911-0009	Turntable (A)
	911-0010	Turntable (B)
	911-0008	Turntable (C)
27	949-0015	Thrust Washer
28	943-0011	Bearing Race
29	554-0049	"C" Washer (B) (C)
30	935-0016	Positioning Rod (B) (C)
31	933-0018	Swivel and Upper Selector Arm Ass'y. (B) (C)
32	496-0151	Compression Spring (B) (C)
33	935-0017	Lift Rod (B) (C)
34	933-0019	Friction Slide (B) (C)
35	496-0152	Pulldown Selector Spring (B) (C)
36	551-0033	Screw 8-32 x 3/16" (B) (C)
37		Selector Bracket (B) (C)
38	551-0031	Rear Mounting Screw
39		Screw 8-32 x 7/8" (A)
	551-0038	Screw 8-32 x 5/8" (B) (C)
40	920-0009	Selector Housing (B)
	920-0006	Selector Housing (C)
	920-0010	Tone Arm Base (A)
41		Nut Pal
42	940-0007	Tone Arm Rest (A)
	940-0008	Tone Arm Rest (B)
	940-0006	Tone Arm Rest (C)
43		Motor Board
44		Screw 8-32 x 1/4"
45	551-0032	Front Mounting Screw
46	954-0020	Reject-On-Off Knob (A)
	954-0010	Reject-On-Off Knob (B) (C)
47	554-0052	"C" Washer
48	554-0053	"C" Washer
49	954-0012	Speed Control Knob (A)
	954-0011	Speed Control Knob (B) (C)
50	714-0107	Escutcheon (A)
	714-0109	Escutcheon (B)
	714-0106	Escutcheon (C)
51	924-0009	Motor Ass'y. (A) (B)
	924-0008	Motor Ass'y. (C)
51A		Spring Index
51B		Motor Mounting Grommet
51C		Hairpin Clip
51D		Fibre Washer
51E		Cup Washer
51F	923-0026	Drive Wheel (For Alliance Motor)
	923-0027	Drive Wheel (For GI Motor)
51G		Follower Spring
51H		"C" Washer
51J		Follower Link
51K		Drive Tension Lever
51L		Drive Tension Spring
51M	923-0001	Drive Belt
51N		Speed Adaptor Pulley
51P		Felt Washer
52	496-0156	Automatic Shutoff Spring
53	937-0009	Automatic Shutoff Ass'y.
54		Screw 6 x 1/4"
55	935-0026	Push Clip Rod
56	554-0059	"C" Washer
57	949-0018	Thrust Washer
58	933-0034	Locator Pawl
59	933-0035	Trip Pawl
60	933-0036	Clutch Arm
61		Cup Washer
62	496-0138	Clutch Spring
63	926-0015	Cam Wheel
64		Screw 4-32 x 3/8"
65	937-0024	Pushoff Shaft
66	551-0035	Screw 8-32 x 3/16"
67	934-0009	Spindle Mounting Bracket
68	496-0165	Pushoff Spring
69	554-0054	"C" Washer
70		Adjustment Screw
71		Screw 8-32 x 1/4"
72		Mounting Screw Retainer
73	935-0018	Speed Control Rod
74		Flat Washer
75	935-0019	Automatic Shutoff Rod
76		Special Mounting Washer
77		"C" Washer
78		"C" Washer
79	554-0056	Retaining Spring
80	933-0021	Locking Lever
81	933-0022	Locking Arm
82		Fibre Washer
83	486-0017	Switch Cover (A)
	486-0016	Switch Cover (B) (C)
84	496-0158	On-Off Switch Spring
85	496-0157	Reject Lever Spring
86	554-0052	"C" Washer
87	496-0159	Cam Latch Spring
88	496-0160	Pushoff Lever Spring
89		Hex Nut 8/32"

MECHANICAL PARTS LIST (CON'T)

Ref. No.	Part No.	Description
90	496-0161	Slide Return Spring
91	937-0010	Speed Shaft and Lever Ass'y.
92		Screw 6-20 x 1/4"
93		Grommet
94	496-0162	Anti-Rattle Spring
95	937-0011	Shaft and Lever On-Off
96	935-0020	Shutoff Rod
97		Stud (Part of Item 100)
98	933-0029	Rest Positioning Lever
99		Screw 4-40 x 1/8"
100		Lift Rod Clamp
101	935-0021	Lift Rod (B) (C)
102	554-0057	Washer
103		Thrust Washer
104		Sub-Plate
105	933-0030	Tone Arm Actuating Lever
106	544-0058	Hairpin Clip
107	935-0022	Push Trip Rod
108		Screw 6-32 x 3/16"
109	937-0014	On-Off Switch Ass'y..
110	496-0163	Tone Arm Positioning Spring
111	937-0015	Lower Selector
112	949-0017	Main Slide
112A		Cam Latch (Part of Item 112)
112B		Reject Lever (Part of Item 112)
113	496-0164	Actuating Lever Return Spring
114	937-0017	Lift Shaft Ass'y.
115	918-0010	Detent Plate (A)
116		Ball Bearing 1/8" Diameter (A)
117	937-0025	Shaft and Arm Detent (A)
118	954-0013	Size Selector Knob (A)
119		Screw 4-40 x 1/8" (A)
120	933-0038	Pressure Adj. Lever (A)
121		Support Bracket (A)
122		Bracket Mounting Screw (A) 4-42 x 1/4" (A)
123		Screw 4-40 x 1/2" (A)
124		Screw 4-40 x 1/8" (A)
125		Mounting Spring
126		"C" Washer
127		Screw 8-18 x 3/8"

Note: The letter (A) designates parts for Chassis 1-318-1 only.
The letter (B) designates parts for Chassis 1-318-2 only.
The letter (C) designates parts for Chassis 1-318-3 only.
Parts having no letter are used in all models.



45 RPM SPINDLE PARTS

45 RPM SPINDLE PARTS LIST

Ref. No.	Part No.	Description
128		Actuator
129		Spindle Nose
130		Separator (2)
131		Separator Bolt (2)
132		Separator Spring
133		Actuator Spring
134		Spindle Housing
135		#4-24 by 1-1/8" Phillips Rd. Hd. #25 Screw
136		Record Locator
137		Retainer Ring

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WESTINGHOUSE MODELS HF100BN, HF101BN (Ch. V-2500-1)

WESTINGHOUSE MODELS
HF100BN, HF101BN (Ch. V-2500-1)

TRADE NAME	Westinghouse Models HF100BN, HF101BN (Ch. V-2500-1)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N.J.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Five)	Types 6AU6 AF Amplifier, 12AX7 AF Amp.-Phase Inv., (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	105-120 Volts AC-50/60 Cycles RATING .46 Amp. @ 117 Volts AC (47 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M MODEL 1200A – PHOTOFACT SET 353-FOLDER 16.

WESTINGHOUSE MODELS
HF100BN, HF101BN (Ch. V-2500-1)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana . Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL HF100BN

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6AU6	
V2	AF Amplifier-Phase Inv.	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	218V031H01	AFH3-29	CO230	FP454.2	TMT-29	T-110	TVL-3640
B	■60	300							
C	▲10	250							
C2	4	50NP	218V035H01	NP-PRS50V4	BBR8-150 † BBR8-150 †	TC41 † TC41 †	TD-8-150 † TD-8-150 †	MT-1508 † MT-1508 †	R2415 *

* Non-catalog item.
† Connect negative leads together.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.15	400	210V011A54	P488N-15		CUB4P15	GEM-4015	4TM-P15	
C4	.047	400	210V054A73	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	.004	600		P688N-004	D6-402	CUB6D4	GEM-624	6TM-D4	Note 1
C6	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C7	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C8	.01	400	210V051A03	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C9	100		215V101A01	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	Note 1
C10	.047	600	210V024A72	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C11	.047	600	210V024A72	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	270V047H01	B-70	A47-1meg-Z	Q13-137	U53	Loudness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	1meg	½	270V048H02	B-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	270V048H01	B-69	A47-1meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

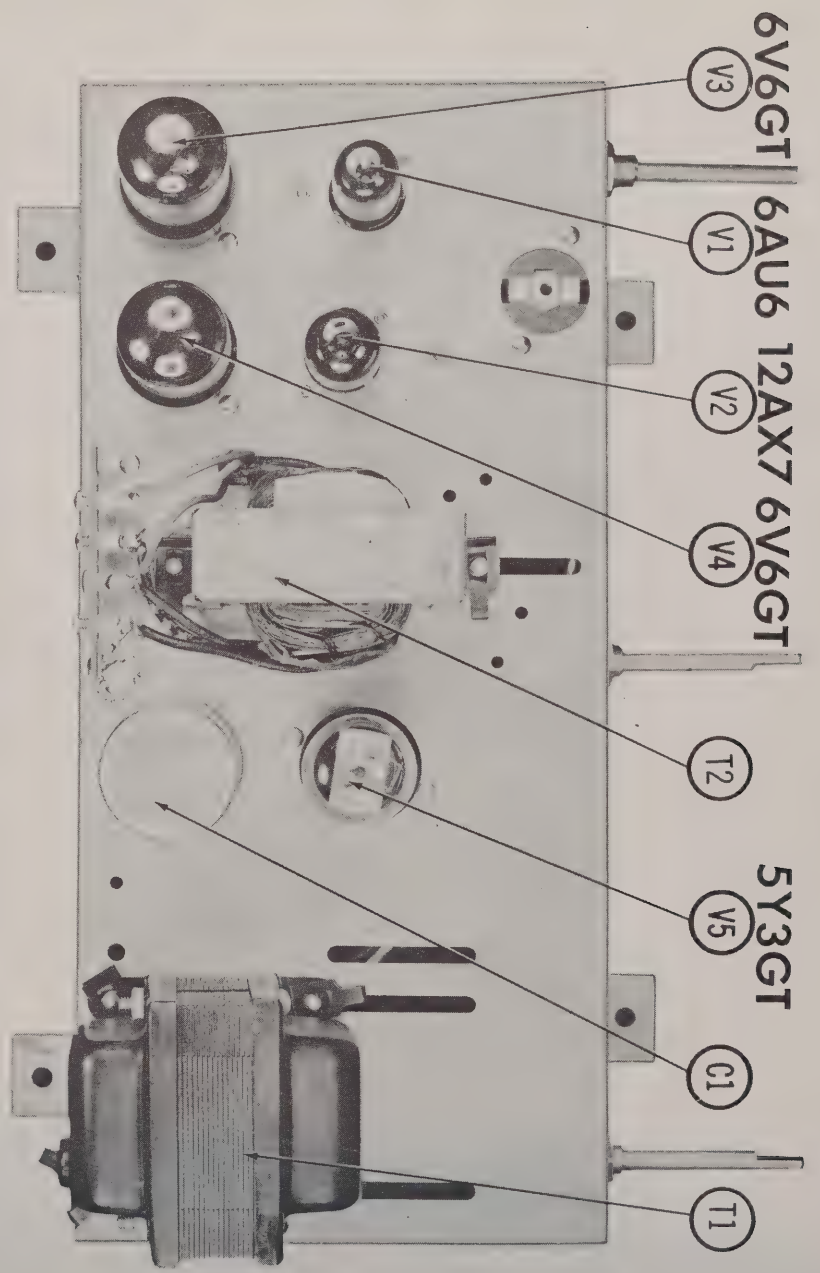
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	NOTES
R4	470K		250V234A47	
R5	100K		250V221A04	
R6	470K		250V224A74	
R7	1000Ω		250V221A02	
R8	4700Ω		250V224A72	
R9	100K		250V231A04	
R10	470K		250V224A74	
R11	6800Ω		250V226A82	
R12	1meg		250V231A05	

ITEM No.	RATING OHMS	RATING WATT	Westinghouse PART No.	NOTES
R13	68K		250V226A83	
R14	2200Ω		250V222A22	
R15	68K		250V226A83	
R16	470K		250V234A74	
R17	220Ω	2	250V422A21	
R18	470K		250V234A74	
R19	68K		250V226A83	
R20	2200Ω		250V222A22	
R21	2.7Ω		251V002A79	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .46A	460VCT @ .066A	5V @ 2A	410V006H01	P9204			PC8403	24R09U	R-6A
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.4A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7400Ω CT	12.6Ω tap @ 6.4Ω	430V049H01							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	12"	PM	12.6Ω	570V032H01①	12A6Z12.6 ①	① Phase
SP2	4"	PM	14.5Ω	570V035H01①	4A1Z14.5 ①	
SP3	4"	PM	14.5Ω	570V035H01①	4A1Z14.5 ①	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Tone Compensation	2200mmf, 100mmf, 2200mmf, 22000mmf, 10K, 150K	219V021H01	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Westinghouse PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1		81-TB		56	PT-2	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	JENSEN PART No.	WALCO PART No.	
M2		†S-66 or †♦S-66SD or ♦S-66D	†W-77TPS or †♦W-77DS or ♦W-77TPD	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

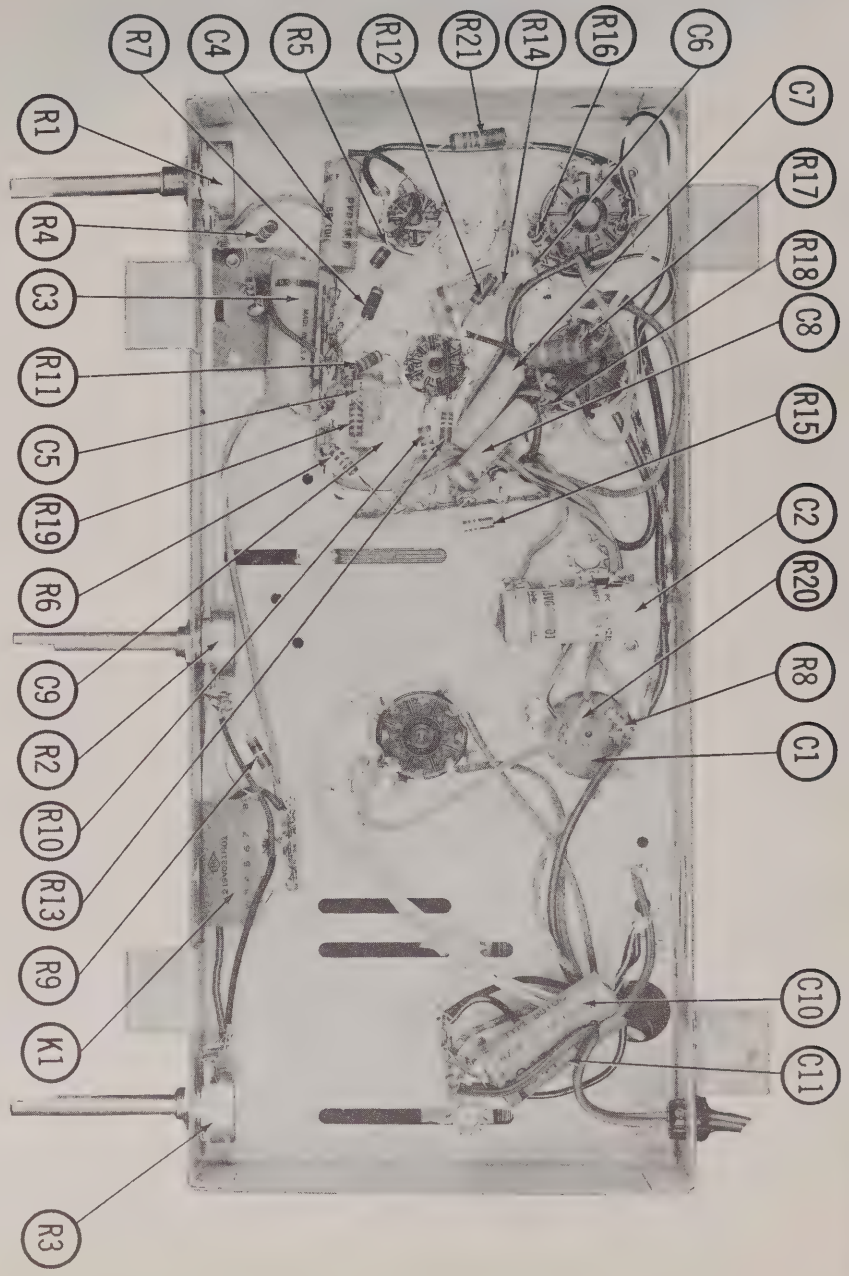
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

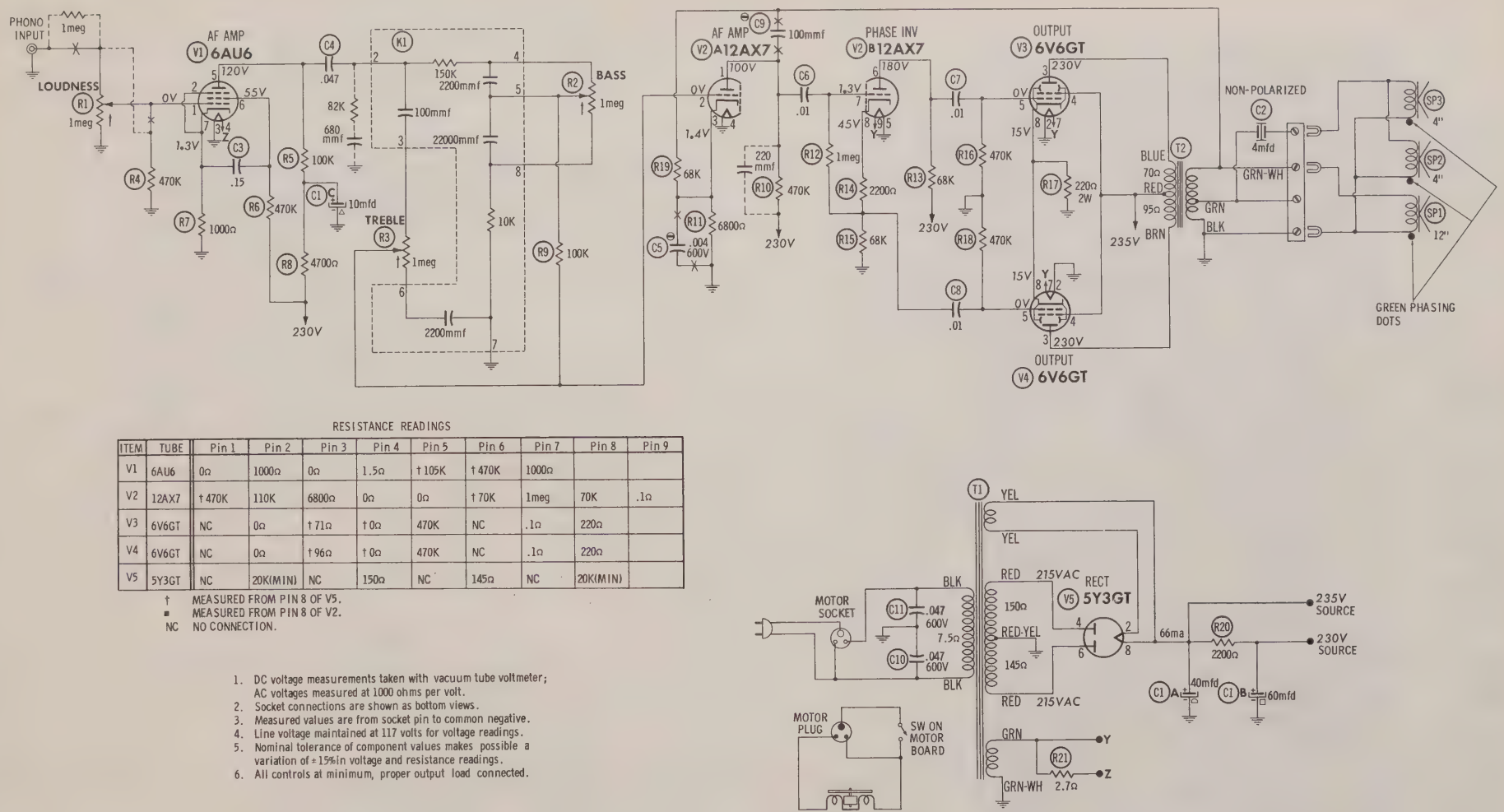
NAME	PART NO.	DESCRIPTION
Knob	550V035H04	Loudness, bass and treble
Cabinet	516V047H02	Limed Oak, Model HF101BN
Cabinet	516V047H01	Mahogany, Model HF100BN

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	0Ω	1000Ω	0Ω	1.5Ω	†105K	†470K	1000Ω		
V2	12AX7	†470K	110K	6800Ω	0Ω	0Ω	†70K	1meg	70K	.1Ω
V3	6V6GT	NC	0Ω	†71Ω	†0Ω	470K	NC	.1Ω	220Ω	
V4	6V6GT	NC	0Ω	†96Ω	†0Ω	470K	NC	.1Ω	220Ω	
V5	5Y3GT	NC	20K(MIN)	NC	150Ω	NC	145Ω	NC	20K(MIN)	

† MEASURED FROM PIN 8 OF V5.
▪ MEASURED FROM PIN 8 OF V2.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

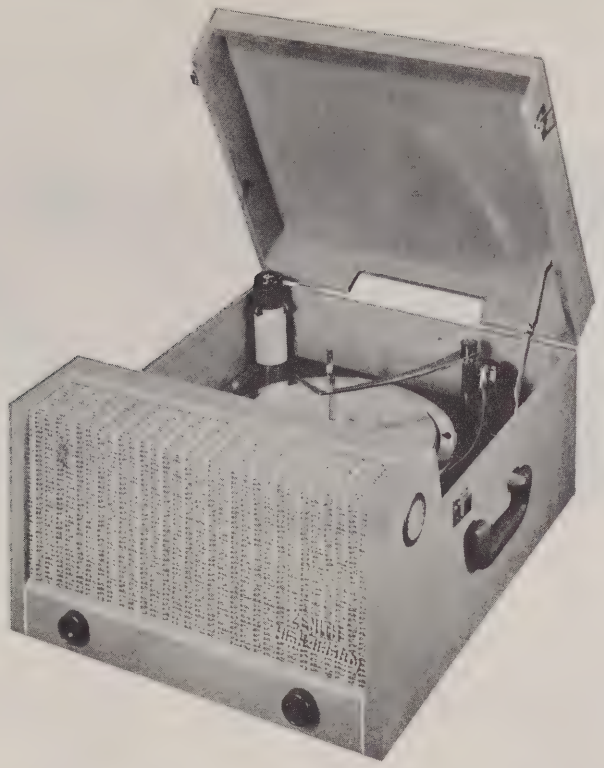
PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ZENITH MODELS HF10G, L, Y, HF11F, L (Ch. 3A04, 3Z04)

ZENITH MODELS HF10G, L, Y, HF11F, L (Ch. 3A04, 3Z04)



TRADE NAME	Zenith Models HF10G, HF10L, HF10W, HF10Y (Ch. 3Z04); HF11F, HF11L (Ch. 3A04)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC Operated Phono Amplifier with 4 Speed Automatic Record Changer
TUBES (Three)	Types 12AX7 AF Amplifier, (2) 50C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .37 Amp. @117 Volts AC (34 Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE ZENITH MODEL S-14078— PHOTOFACT SET 392 FOLDER 14.

ZENITH MODELS HF10G, L, Y, HF11F, L (Ch. 3A04, 3Z04)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H397

PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL HF10G

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amp. - Phase Inv.	12AX7	
V2	Output	50C5	
V3	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■100	150	22-2864	AFH3-11-50	XC0105	FP311.65	TMT-13	D-086	TVL-3444
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.047	200	22-2792	P288N-047	DF-503	CUB2S47	GEM-2147	2TM-S47	
C3	1500		22-12	BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	
C4	33		22-2863						N330 10%
C5	1000	1000	22-17						10%
C6	10000	1000	22-3	DAC-27	DD16-103	BYA10S1M	GEM-1011	BL-S10	
C7	.47	600	22-2765				GEM-6047		10%
C8	10000	1000	22-3	DAC-27	DD16-103	BYA10S1M	GEM-1011	BL-S10	
C9	470	800	22-16						10%
C10	3300		22-11	BPD-0033	DD-332	BYA10D33	UC-5233	5GA-D33	
C11	.1	200	22-1777	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	10000	1000	22-3	DAC-27	DD16-103	BYA10S1M	GEM-1011	BL-S10	
C13	.0022	600	22-2839						10%
C14	.022	200	22-2807						10%
C15	10000	1000	22-3	DAC-27	DD16-103	BYA10S1M	GEM-1011	BL-S10	
C16	10000	1000	22-3	DAC-27	DD16-103	BYA10S1M	GEM-1011	BL-S10	
C17	.047	200	22-2792	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3meg	½	63-4004			Q18-140X		Volume, Tap@1.5meg
R2A	20K	1½	63-4003				■ UE3778	Bass
B	1meg	1½						Treble

■ "STA-LOC" Equivalent; FA24R, OS875A, IK1562

RESISTORS

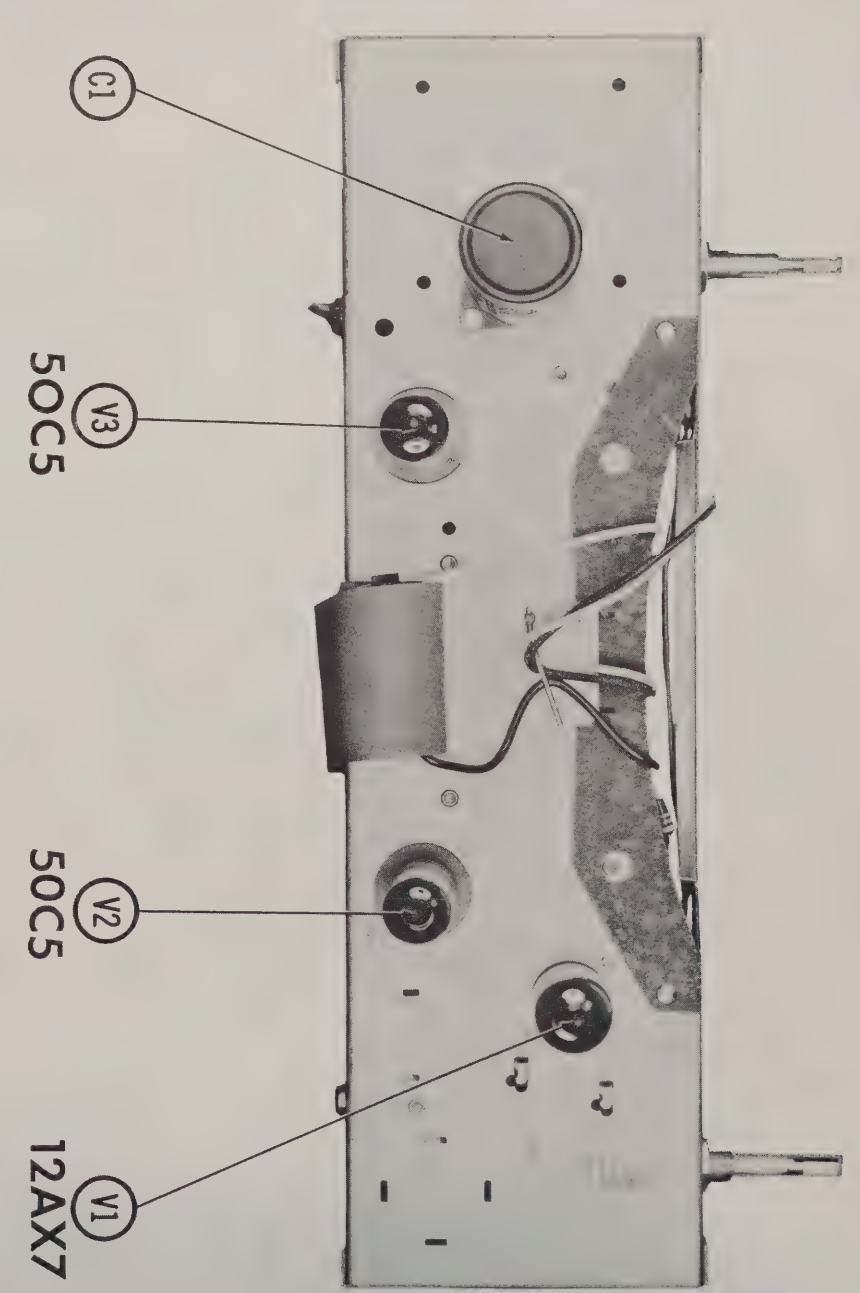
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	ZENITH PART No.	NOTES
R3	3900Ω		63-1810	
R4	330K		63-1890	
R5	6.8meg		63-1947	
R6	10K		63-1827	
R7	220K		63-1884	
R8	220Ω		63-1757	
R9	2200Ω		63-1799	
R10	1000Ω		63-1785	
R11	220Ω		63-1757	
R12	5600Ω		63-1817	
R13	220K		63-1883	
R14	220K		63-1884	
R15	100K		63-1870	
R16	3300Ω		63-1806	
R17	220K		63-1883	
R18	82Ω	1	63-3636	
R19	270K		63-1887	
R20	47K		63-1856	
R21	47K		63-1856	
R22	1000Ω	1	63-965	
R23	33Ω	2	63-3643	
R24	22Ω	1	63-3197	
R25	33K		63-1848	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3900Ω CT	3-4Ω	95-1481							
	TURNS RATIO PRI.	SEC.2								
	8:	1								

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	49-795	8A21	
SP2	3 1/4"	Electrostatic		S-23829		
SP3	3 1/4"	Electrostatic		S-23829		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.103A	212-18 ①	1005A ①	RS150 ①	150 ① M150 ②	①Selenium Type ②Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ZENITH PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	142-80	81-TB		56	*PT-2	* Not necessary unless orginal mounting mechanism is damaged.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ZENITH PART No.	JENSEN PART No.	WALCO PART No.	
M3				

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	46-1854	Volume Model HF11L
Knob	46-1318	Volume & Tone, Models HF10G, HF10Y
Knob	46-1827	Volume, Model HF11F
Knob	46-1852	Treble, Model HF11L
Knob	46-1813	Treble, Model HF11F
Knob	46-1853	Bass, Model HF11L
Knob	46-1815	Bass, Model HF11F
Knob	46-1301	Tone, Models HF10G, HF10Y
Knob	46-1615	Dummy, Models HF10G, HF10Y
Knob	46-1616	Dummy, Model HF10L
Knob	46-1317	Volume & Tone, Model HF10L
Knob	46-1300	Tone, Model HF10L
Cabinet	14-2258L	Model HF11L
Cabinet	14-2258F	Model HF11F
Cabinet	14-2293G	Model HF10G
Cabinet	14-2113L	Model HF10L
Cabinet	14-2113Y	Model HF10Y
Handle	36-177	Cabinet, Model HF11F
Handle	36-184	Cabinet, Model HF11L
Handle	36-153	Cabinet,Model HF10G
Handle	36-151	Cabinet, HF10L
Handle	36-152	Cabinet, HF10Y

WIRING DATA

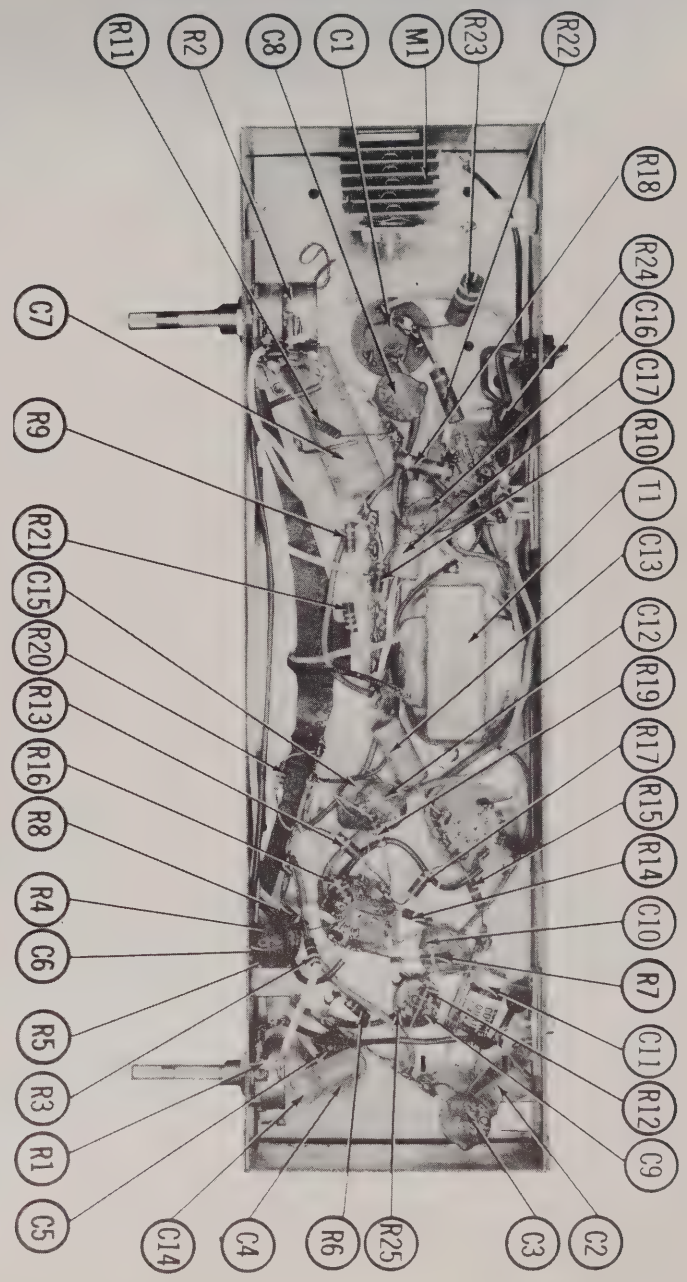
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

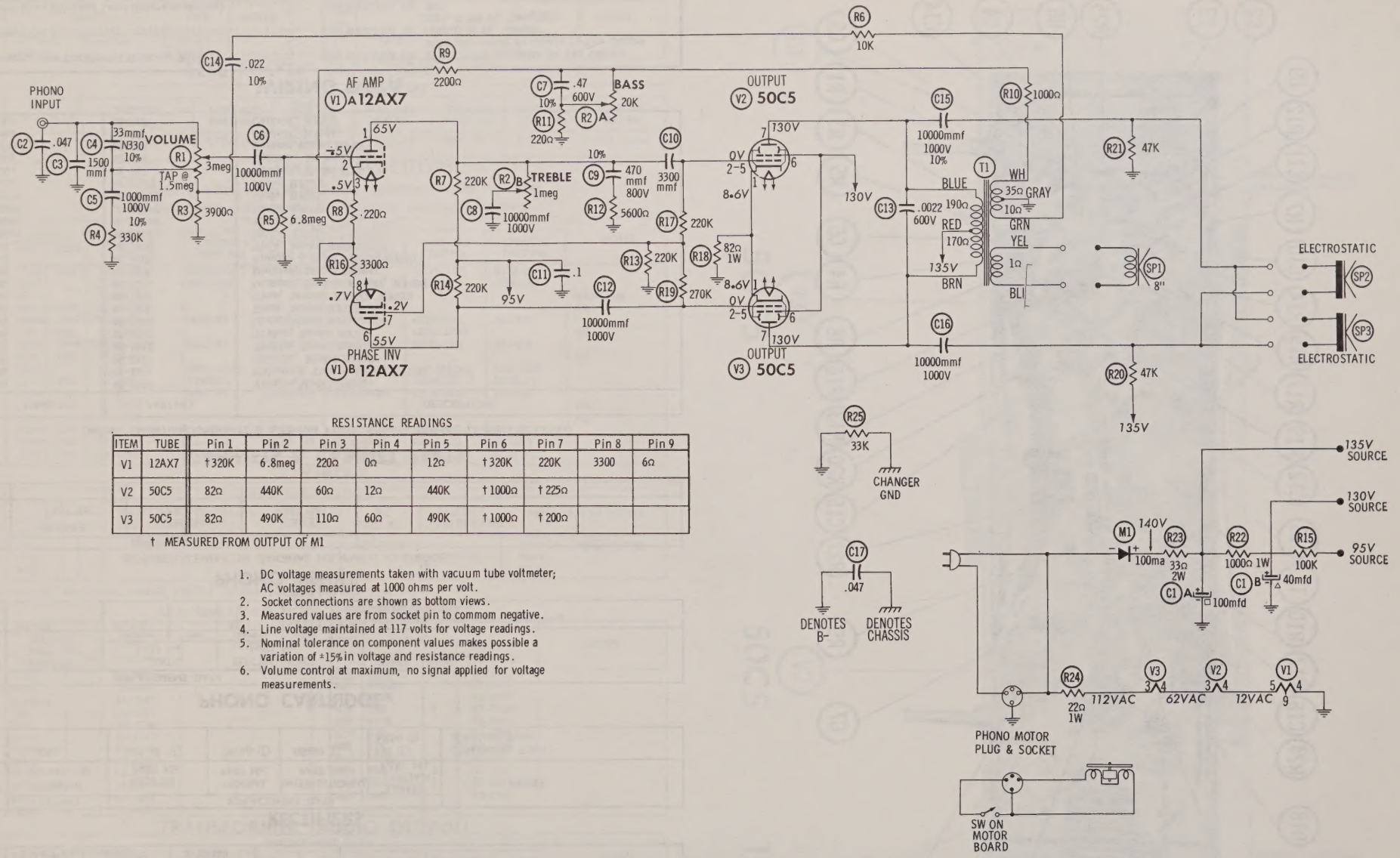
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





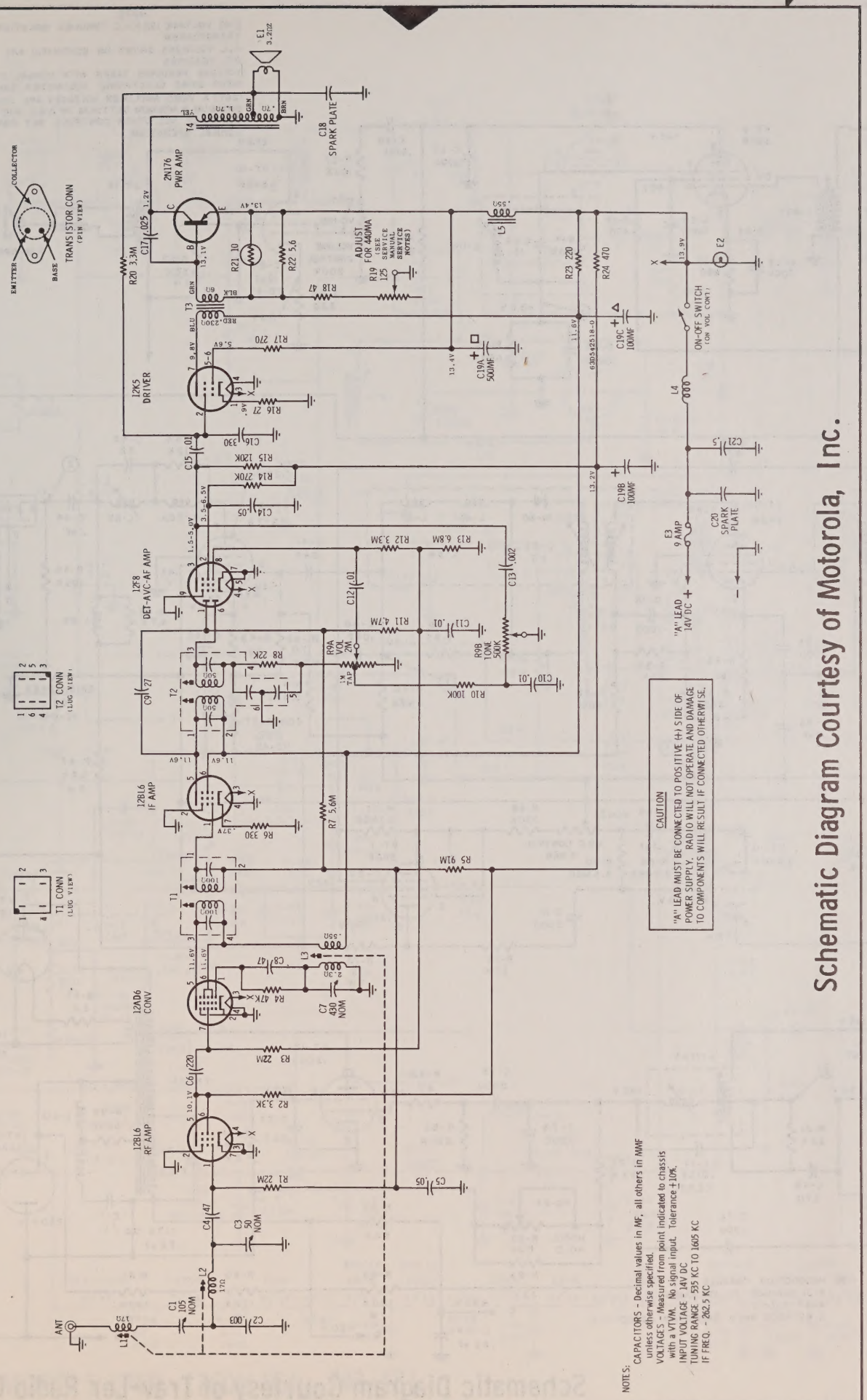
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†320K	6.8meg	220Ω	0Ω	12Ω	†320K	220K	3300	6Ω
V2	50C5	82Ω	440K	60Ω	12Ω	440K	†1000Ω	†225Ω		
V3	50C5	82Ω	490K	110Ω	60Ω	490K	†1000Ω	†200Ω		

† MEASURED FROM OUTPUT OF M1

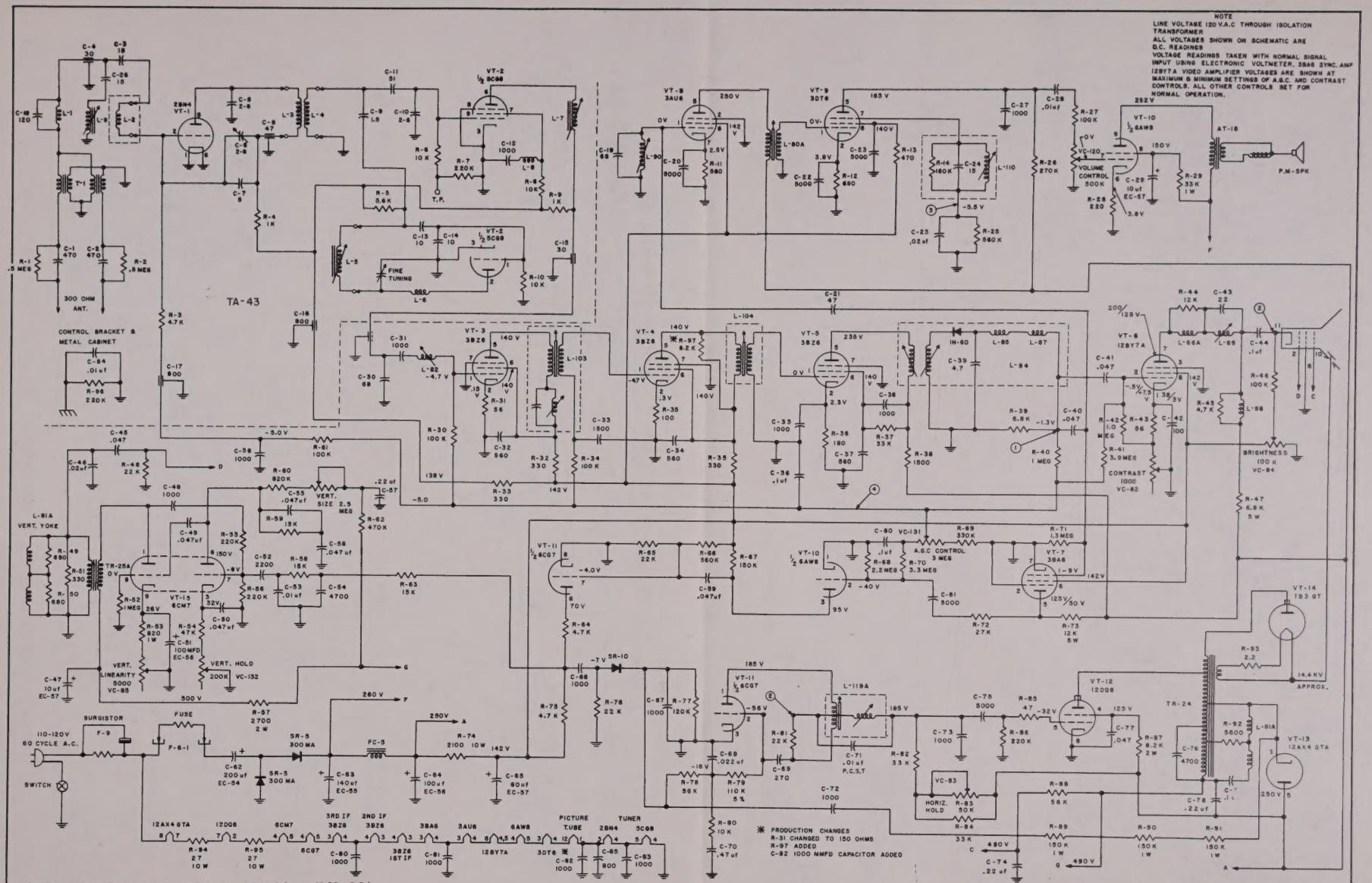
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODEL 8MX


2N176 PWR AMP
12K5 DRIVER
12F8 DET-AVC-AF AMP
12BL6 IF AMP
12AD6 CONV
12BL6 RF AMP
TRANSISTOR CONN (PIN VIEW)
T2 CONN (LUG VIEW)
T1 CONN (LUG VIEW)
ADJUST FOR 440MA (SEE SERVICE MANUAL SERVICE NOTES)
ON-OFF SWITCH (ON VOL CONT)
SPARK PLATE
9 AMP
"A" LEAD 14V DC
CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.
ANT

NOTES:
CAPACITORS - Decimal values in MF, all others in MMF unless otherwise specified.
VOLTAGES - Measured from point indicated to chassis with a VTVM. No signal input. Tolerance ±10%.
INPUT VOLTAGE - 14V DC
TUNING RANGE - 535 KC TO 1605 KC
IF FREQ. - 262.5 KC

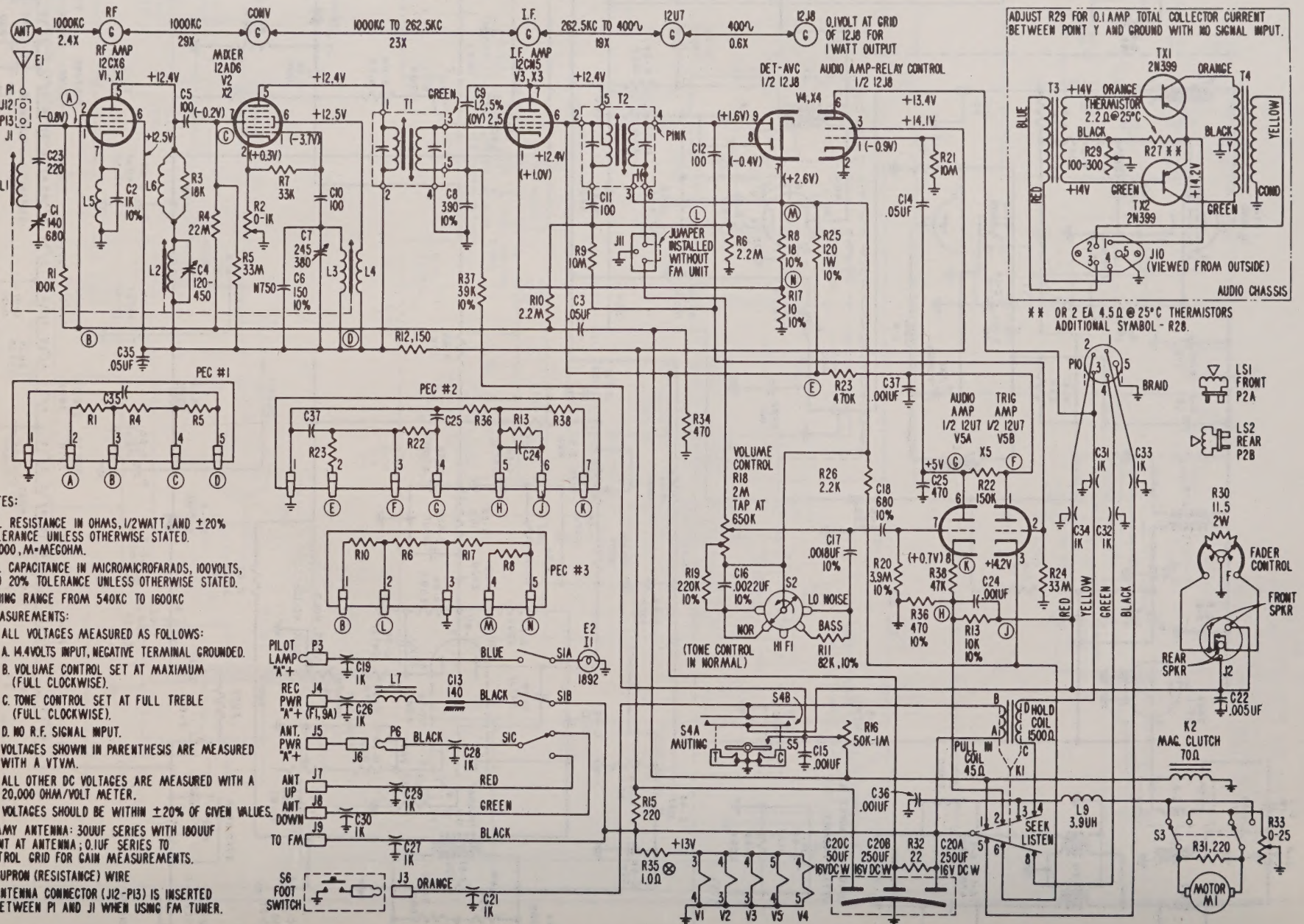
Schematic Diagram Courtesy of Motorola, Inc.



TRAV-LER MODELS 1760, 1760U (Ch. 743-18)

Schematic Diagram Courtesy of Trav-Ler Radio Corp.

LINCOLN MODEL 85BHP (FFC-18805-C, -D) Above Serial # 50, 000



NOTES:

ALL RESISTANCE IN OHMS, 1/2WATT, AND ±20% TOLERANCE UNLESS OTHERWISE STATED.
K=1000, M=MEGOHM.

ALL CAPACITANCE IN MICROMICROFARADS, 100VOLTS, AND 20% TOLERANCE UNLESS OTHERWISE STATED.

TUNING RANGE FROM 540KC TO 1600KC

MEASUREMENTS:

1. ALL VOLTAGES MEASURED AS FOLLOWS:
   - A. 14.4VOLTS INPUT, NEGATIVE TERMINAL GROUNDED.
   - B. VOLUME CONTROL SET AT MAXIMUM (FULL CLOCKWISE).
   - C. TONE CONTROL SET AT FULL TREBLE (FULL CLOCKWISE).
   - D. NO R.F. SIGNAL INPUT.
2. VOLTAGES SHOWN IN PARENTHESIS ARE MEASURED WITH A VTVM.
3. ALL OTHER DC VOLTAGES ARE MEASURED WITH A 20,000 OHM/VOLT METER.
4. VOLTAGES SHOULD BE WITHIN ±20% OF GIVEN VALUES.

DUMMY ANTENNA: 300UUF SERIES WITH 180UUF SHUNT AT ANTENNA; 0.1UF SERIES TO CONTROL GRID FOR GAIN MEASUREMENTS.

⊗ CUPRON (RESISTANCE) WIRE

* ANTENNA CONNECTOR (J12-P13) IS INSERTED BETWEEN P1 AND J1 WHEN USING FM TUNER.

Schematic Diagram Courtesy of Bendix Radio, Div. of Bendix Aviation Corp.